

Operational Readiness

1.0 Introduction

Operational Readiness is the ability to respond to and manage on-water and marine-related needs. The Fleet Operational Plan (FOP) serves as the template for the Operations Normal Readiness Condition. When this capacity or preparedness is affected, the ROC will be directed to complete the Readiness Response Worksheet Template for Signature by the appropriate authority; the Signed Readiness Response Worksheet will then be distributed to NCC.

1.1 Readiness Conditions

There are 5 Readiness Conditions as described below. It should be noted that a change in Readiness Condition could occur from lowest to highest without passing through the intermediate levels should circumstances warrant.

CCG Fleet Readiness Conditions

Operations Critical Radical Priority Adjustment
Operations Heightened FOP and Additional Mission
Operations Normal FOP
Operations Restricted Mission Delay / Loss
Operations Reduced Program Non-Delivery

1.1.1 Operations Critical (red): Fleet resources assume critical operational tempo, combination of events has to occur; Capability of human and physical resources to deliver on the FOP associated with a catastrophic event, resulting in a radical priority adjustment within the CCG. Operating costs will be increased significantly, Activation of spare resources as required will occur, programs will be deferred and business resumption times will be significant. Serious impact on the environment, economic well-being of the country, safety and security or grave effect on national interest. An extremely rare occurrence.

1.1.2 Operations Heightened (green): Fleet resources assume a heightened operational tempo. In addition to FOP tasks, effort is expended to support an external demand. Operating costs will be increased slightly; fuel and other consumables may be increased. Normal operations might be deferred. Business resumption times will be minimal. Condition exists have a slight to moderate impact on the environment, the economic well-being of the country, or the safety and security of national interest. There is uncertainty about an external event's on delivery of the FOP. This type of occurrence happens on a regular basis.

- 1.1.3 **Operations Normal (blue):** This condition is the regular state of affairs. tempo is necessary to deliver FOP tasks. Adjustments are made routinely to deliver based on various stimuli. Normal is the optimum readiness posture and is composed of the sum of all the mission-ready human, vessel, aircraft, and operations centre resources of Fleet.
- 1.1.4 **Operations Restricted (white);** Fleet resources assume a restricted operational tempo due to a lack of resources or breakdown resulting in a loss or delay of FOP missions. Operating costs, use of fuel and other consumables will be increased; business resumption times will be minimal. This condition exists where an event occurs, normally internal to the CCG Fleet. Slight to moderate impact on the environment, the economic well-being, safety and security of the country and uncertainty about an event's effects on delivery of the FOP. This type of occurrence happens on a regular basis.
- 1.1.5 **Operations Reduced (yellow);** Fleet resources assume a reduced operational tempo, caused by an event or circumstances to remove critical resources from the Fleet. Delivery of Operating costs will be increased for the duration, business resumption times will be noticeable. Programs may be dropped or activation of spare resources or the reassignment of resources, including resources from other regions, may occur. Condition exists where series of events occur. Has impact on environment, economics, safety and security, or a serious effect on national interest. Beyond the scope of the FOP. This occurrence rarely happens.

1.3 Management Authority

The following matrix identifies those positions in the CCG hierarchy, either regionally or nationally, that would normally approve the change in Readiness Condition.

Authority Matrix for Readiness Condition Profiles		
Readiness Condition Profile	Regional	Inter-regional / National
Condition Red Ops Critical	Assistant Commissioner	Commissioner
Condition Green Ops Heightened	Regional Director, Fleet	Director General, Operations
Condition Blue Ops Normal	Superintendent, Regional Operations Centre (ROC)	
Condition White Ops Restricted	Superintendent, ROC	Superintendents, ROC – by consensus
Condition Yellow Ops Reduced	Regional Director, Fleet	Director, Operational

1.4 Readiness Response Worksheet

WESTERN REGION

Date: June 29th, 2018

Current Readiness Profile: Ops Normal - Blue

Proposed Readiness Profile: Ops Restricted - White

Resource Status: All resources are operating as per the FOP with the exception of the following resources:

Vessels:

- CCGS Bartlett. Asbestos wipe tests concluded that there is ACM contamination throughout the vessel. ACM remediation is underway. The vessel is expected to return to service on 27/07/2018

Program Status: The following missions/programs contained in the FOP are currently affected:

- The potential further delay to repairing damage done to the buoyage system in the Fraser River by this year's flooding.
- Delay in the recertification and annual inspection to the Light house aerals & derricks.
- Delays/added pressures to complete the MNS Buoy program as per the FOP for the remaining year.

Reason for Update in Profile:

Western Region only has two vessels capable of conducting buoy tending operations CCGS Bartlett & CCGS Sir Wilfrid Laurier. CCGS Bartlett is near to the end of its operational life (49 year old), and has become prone to loss of operational program time due to various issues. CCGS Sir Wilfrid Laurier is scheduled to depart the region on July 3rd 2018 for the western arctic. On its return to the region at the end of October it is scheduled to enter an estimated six month vessel life extension refit.

After the CCGS Sir Wilfrid Laurier departs for the western arctic on July 3rd 2018, the Canadian Coast Guard will not have the capability to lift or place floating aids to navigation on the west coast of Canada until CCGS Bartlett returns to operational service on or about July 27th, 2018.

Agreed: _____ **Regional Director, Fleet**

Signature

Sheppard, Frederick

From: CCGS Bartlett - Chief Engineer
Sent: January 4, 2016 10:02 AM
To: *Dept Heads; CCGS Bartlett - MCR
Subject: Emailing: 22603 Asbestos Survey Update V1.0 July 2014 - CCGS Bartlett
Attachments: 22603 Asbestos Survey Update V1.0 July 2014 - CCGS Bartlett.pdf

Re: Asbestos Survey

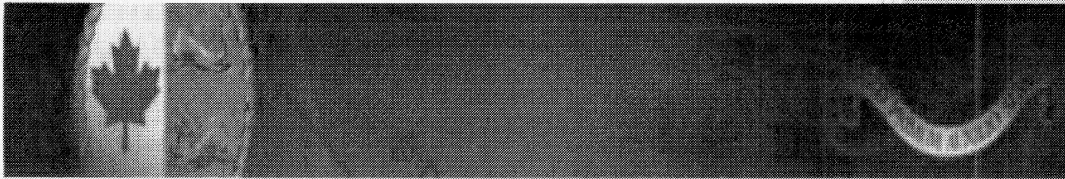
There is a hard copy of the Asbestos Survey in the CE's cabin (in bookshelf near washplace), but you may want to keep a shortcut on your desktops to the survey, in the event you want to be aware of potential asbestos hazards prior to performing a particular job.

I will also post a copy on O-Drive & P-drive.

And you likely all know, that only those people who have been trained in Asbestos Abatement, are considered to be qualified to work on asbestos (mostly bulkhead panels) without endangering themselves and/or the crew.

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Prepared for:



Canadian Coast Guard Ship CCGS *Bartlett*

Asbestos Risk Assessment



Prepared by:



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August 2014

File: 22603 R1

General Notes

The following is the latest Asbestos Risk Assessment for this vessel. North West Environmental Group (NWEG) conducted this risk assessment in June 2014. This assessment updates information contained in previous reports and NWEG's visual observations made on a room by room basis in May 2013 and June 2014.

Partial History of CCGS Bartlett and asbestos abatement:

The CCGS Bartlett underwent a Vessel Life Extension (Phase I and II) at Allied Shipyards between June 2009 and 2010.

According to this documentation, asbestos abatement during this Vessel Life Extension (VLE) included:

- Removal of all deckhead support structure
- Removals of asbestos containing insulation at the steam and domestic lines
- Removal of asbestos containing mastic at all windows
- Removal of asbestos containing paneling in the way of drop windows.
- Removal of floor covering in the Galley, Mess and Lounge
- Removal of deck steel plate from outboard bulk head to approximately 6' inboard in specified Upper Deck compartments.
- Tiles in alleyway to Radio Room and Bridge and N-03 (Radio Room)

NWEG was unable to verify the extent of the deck plate removal during the post VLE survey as all finishing's were re-fitted or covered before NWEG's visit.

Because the Canadian Coast Guard (CCG) continues with its asbestos removal and abatement program, there may have been some changes made after this report was printed.

In any case of uncertainty, all material must be considered 'asbestos containing' until it has been properly identified.

All concealed pipe insulation, textile wrap and fittings above suspended T-bar and beveline tiles must be assumed to contain asbestos.

Asbestos gaskets may be present around the perimeter of fire doors throughout the ship. The interior of fire doors are suspected to contain asbestos insulation unless otherwise stated. Older fire hoses (non-butyl or non-duroid canvas style) may be asbestos-containing.

Decks: Asbestos floor tiles may be present beneath carpeted areas. Asbestos containing floor tiles may also be concealed beneath new layers of sheet flooring. Deck screed and asbestos block insulation has been found in various locations beneath deck screed and other floor coverings. These materials must be sampled prior to disturbance.

All insulated penetrations including electrical, pipe, duct are assumed to contain asbestos unless otherwise stated.

All valve, flange and equipment gaskets are suspected to contain asbestos. Representative bulk samples should be collected of gasket materials before any work that may disturb the material is carried out.

NOTE 1 – An asbestos risk assessment by a qualified person must be completed prior to any removal and/or alteration work aboard the vessel. Removal and/or alteration work requires control measures to be implemented in accordance with WorkSafeBC and Labour Canada regulations and CCG specific requirements. Protective personal equipment is required during any work or major alteration that may disturb synthetic or asbestos insulation and/or dust that may be present.

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Safe work procedures must be implemented prior to exposing or disturbing any of these areas/materials.

Warning: *in the event any additional suspect hazardous materials are encountered during renovation or demolition activities, work on those materials must stop immediately and remain undisturbed until testing confirms the presence or absence of asbestos or other hazardous material. If any material suspected of containing asbestos or another hazardous material is disturbed during the work, all work shall stop until the area is contained, the hazard evaluated by a qualified professional and the hazardous materials, if indeed present, is safely managed by a qualified contractor.*



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Please See General Notes page (i)

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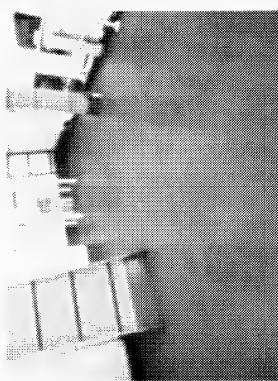
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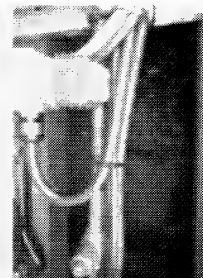
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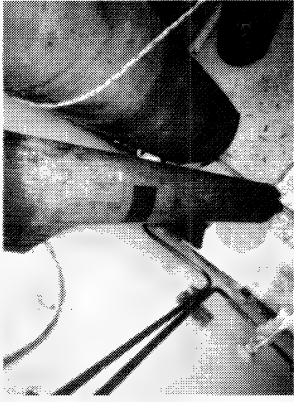
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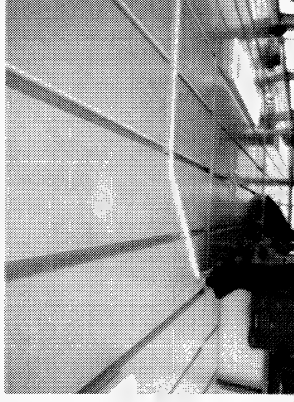
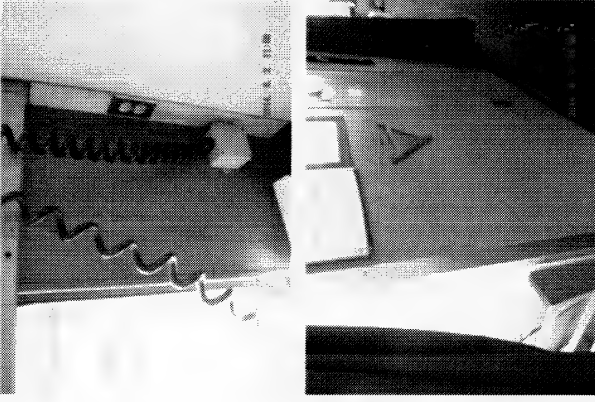
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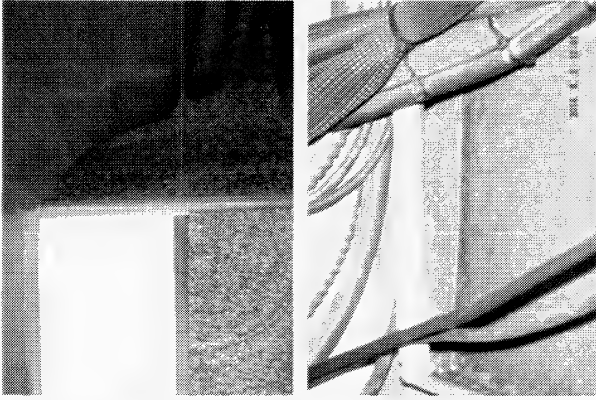
Deck 5 Wheelhouse Top		Wheelhouse Top					
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture	
Deckhead	n/a						
Bulkhead	n/a						
Lagging	None observed.						
Deck	Painted metal.						
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						
Comments							



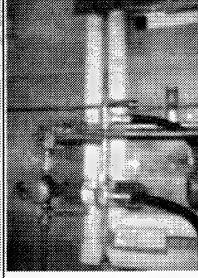
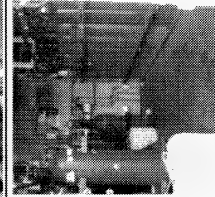
Deck 5 Wheelhouse Top						No. 2 A/C Plant	
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture	
Deckhead	n/a						
Bulkhead	Styrofoam and Painted metal.						
Lagging	Man-made mineral fibre insulation (Fibreglass-type) and non-asbestos textile. Cementitious elbows and fittings may contain asbestos.				Maintain in an intact condition. Sample prior to disturbance		
Deck	Painted metal.						
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						
Comments							

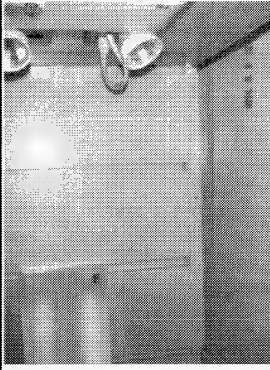

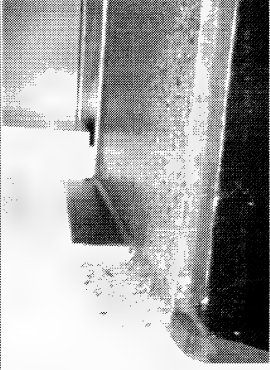
Deck 5 Wheelhouse Top		Funnel Casing				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Painted metal.					
Bulkhead	Perforated metal over man-made mineral fibre insulation.					
Lagging	Man-made mineral fibre insulation (Fibreglass-type) and non-asbestos textile. Cementitious elbows and fittings may contain asbestos. Navy board. High temperature jacketing and metal mesh over man-made mineral fibre insulation.				Maintain in an intact condition. Sample prior to disturbance	
Deck	Checker plate metal catwalk.					

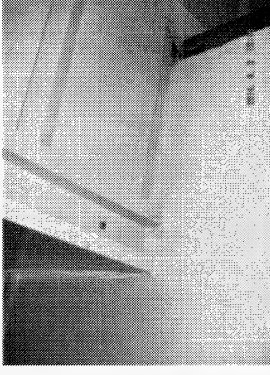
Other	Caulking and Penetrations present: may contain older asbestos containing materials below. Possible asbestos sheet gasket material observed.					
Comments						

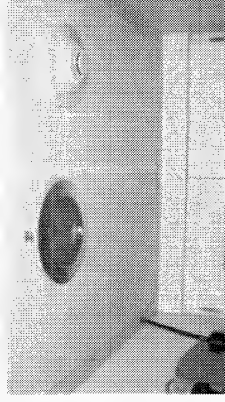
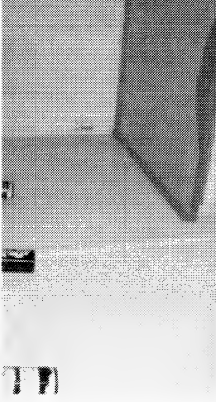
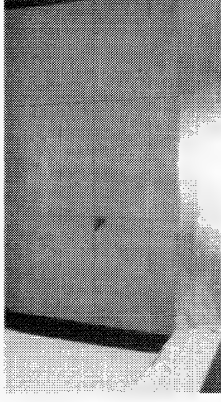
Deck 4 Navigation Bridge Deck			Wheelhouse			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Fwd: Wood panels. Aft (behind cabinet): asbestos containing marine panel Aft center line: non-asbestos marine panel Port & Stbd: Wood panels.	FAIR	HIGH	MEDIUM	Caulk all smaller cracks and joints with fire rated caulking.	
Lagging	Pipe lagging and red duct mastic above deckhead panels contains asbestos.					




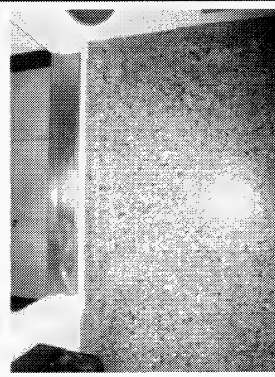
Deck	Carpet over sheet flooring and asbestos tile over asbestos containing deck screed.	GOOD	LOW	LOW	Maintain concealed deck screed if present in an intact condition. Sample screed prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below					

Deck 4 Navigation Bridge Deck		CO2 Room (N07)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over mineral fibre board					
Bulkhead	Perforated metal over mineral fibre board					
Lagging	Man-made mineral fibre insulation (Fibreglass-type).					
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	New door (non-asbestos). Not accessed 2014.					

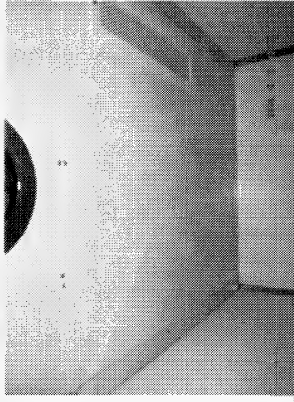
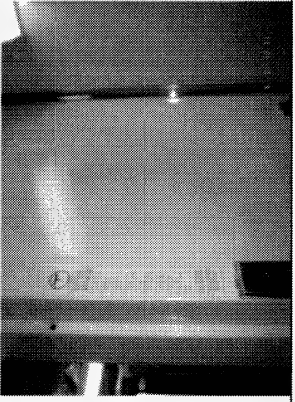
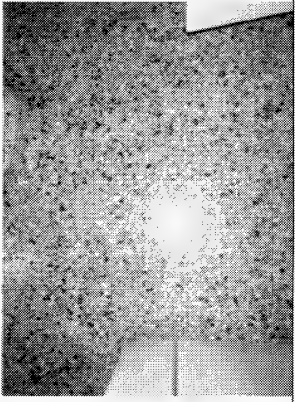
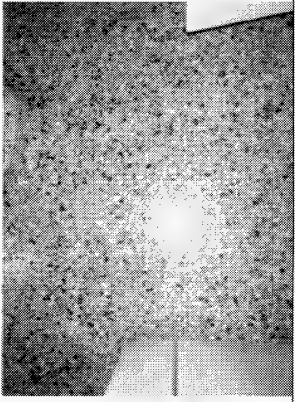
Deck 4 Navigation Bridge Deck				Stairway to Wheelhouse			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture	
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.						
Bulkhead	Asbestos containing marine panels.	FAIR - GOOD	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.		
Lagging	None observed.						
Deck	Sheet flooring, possibly over asbestos containing floor tiles or deck screed Note: no info on removal of AC tiles during VLE	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.		
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						

Comments		
	<p>2013: Some panels covered with metal sheeting. Metal flashing needs additional screw and caulking. 2014: Caulk observed on flashing. Ensure seal is maintained and repair as needed.</p>	


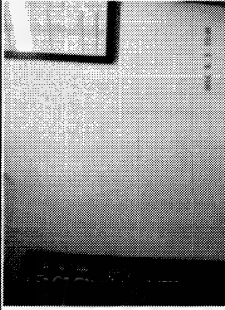

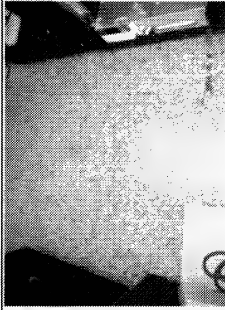
Deck 4 Navigation Bridge Deck			Library / Distress Signals			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	GOOD	HIGH	MEDIUM	Maintain in an intact condition.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	New tiles possibly over asbestos containing floor tiles or deck screed Note: no info on removal of AC tiles during VLE	FAIR TO GOOD	HIGH	LOW	Remove damaged tiles under moderate risk work procedures. Maintain in an intact condition.	
Other						
Comments						

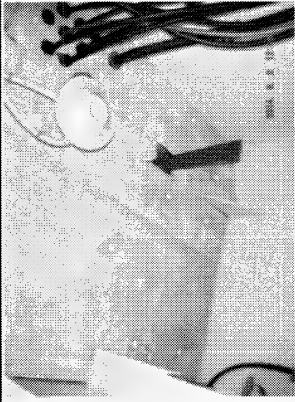
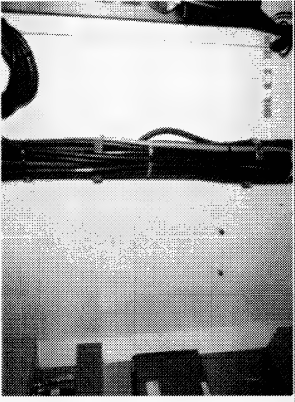

Deck 4 Navigation Bridge Deck				Alley to Communication Centre			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture	
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.						
Bulkhead	Asbestos containing marine panels.	GOOD	HIGH	MEDIUM	Maintain in an intact condition.		
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.						
Deck	Epoxy flooring, possibly over asbestos containing floor tiles or deck screed	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.		

Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						


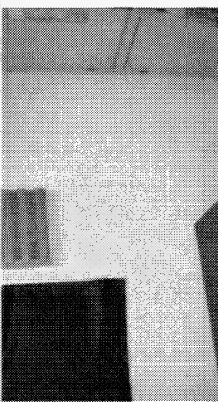


Deck 4 Navigation Bridge Deck				Washroom (N-12)			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture	
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.						
Bulkhead	Asbestos containing marine panels.	GOOD	HIGH	MEDIUM	Maintain in an intact condition.		
Lagging	Pipe lagging and red duct mastic above deckhead panels contain asbestos.						
Deck	Epoxy possibly over asbestos containing floor tile and deck screed.	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.		



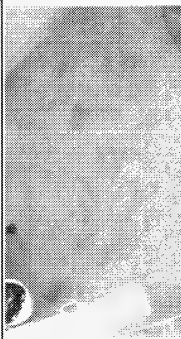
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

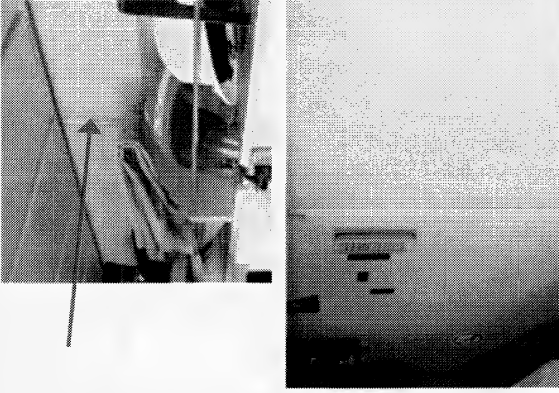
Deck 4 Navigation Bridge Deck			Communication Centre / Server Room			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Foil-faced man-made mineral fibre insulation (Fibreglass-type).					
Bulkhead	New non-asbestos marine panels					
Lagging	Armaflex insulation on ducts. Red duct mastic contains asbestos.	FAIR	MEDIUM	LOW	Maintain in an intact condition.	
Deck	Epoxy possibly over asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below					
Comments						


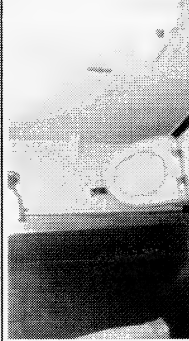
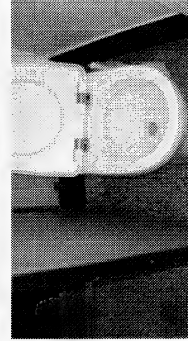
Deck 4 Navigation Bridge Deck			Communication Centre Closet			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Outboard: Perforated metal over man-made mineral fibre insulation (Fibreglass-type). Rest: Painted metal.					
Lagging	None observed.					
Deck	Painted metal.					

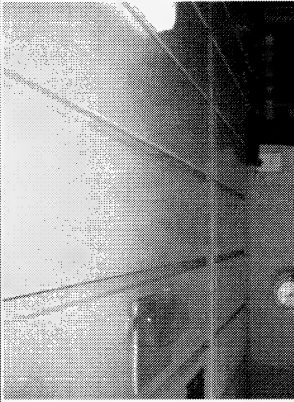

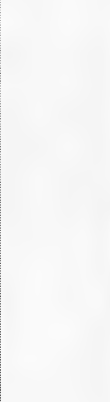
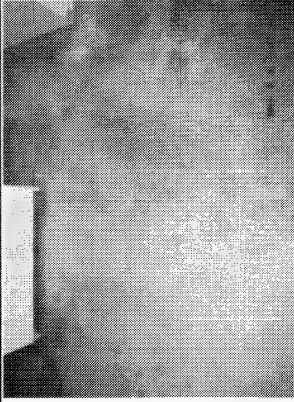
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

Deck 4 Navigation Bridge Deck		Spare (N-5)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR TO GOOD	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Armaflex board insulation on ducts. Textile over man-made mineral fibre insulation (Fibreglass-type). Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					

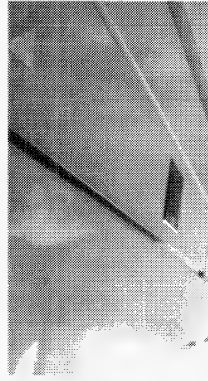

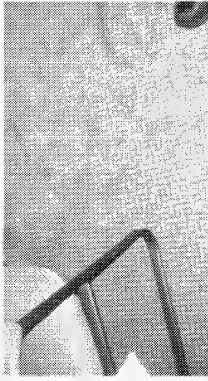
Deck 3 Boat Deck		Chief Officer (B-8)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Inboard: Asbestos containing marine panels. Rest: New none-asbestos marine panels under windows.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over asbestos tile and/or asbestos containing deck screed.	GOOD	LOW	HIGH	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					

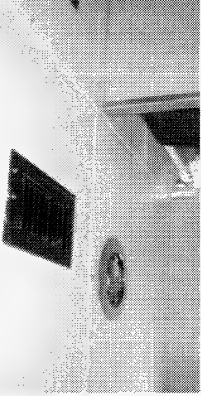
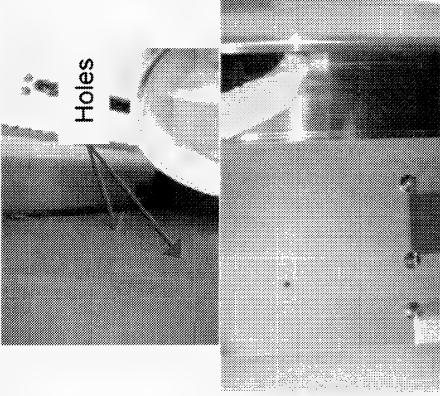
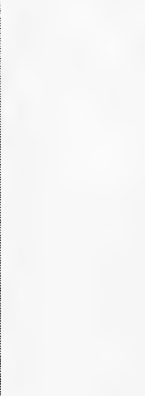
Deck 3 Boat Deck		Chief Officer (B-8)
Comments	<p>Recommend installing flashing over seams between marine sheet panels</p> 	

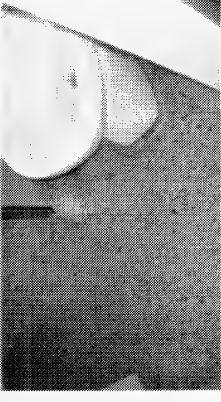
Deck 3 Boat Deck							Chief Officer Washroom		
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture			
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.								
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panel.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.				
Lagging	Pipe lagging and red duct mastic above deckhead panels contains asbestos.								
Deck	Epoxy coating over deck screed (screed may contain asbestos).	GOOD	LOW	HIGH	Maintain in an intact condition. Sample screed prior to disturbance.				
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.								
Comments									

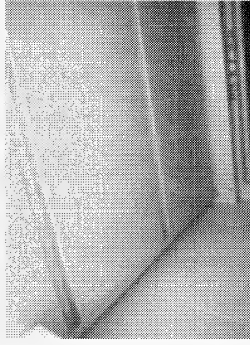

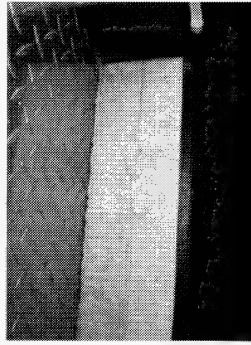
Deck 3 Boat Deck		Chief Engineer (B-6)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Aft: Non-asbestos marine panel. Rest: Asbestos containing marine panel.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over asbestos tile and/or asbestos containing deck screed.	GOOD	LOW	HIGH	Maintain in an intact condition. Sample prior to disturbance.	

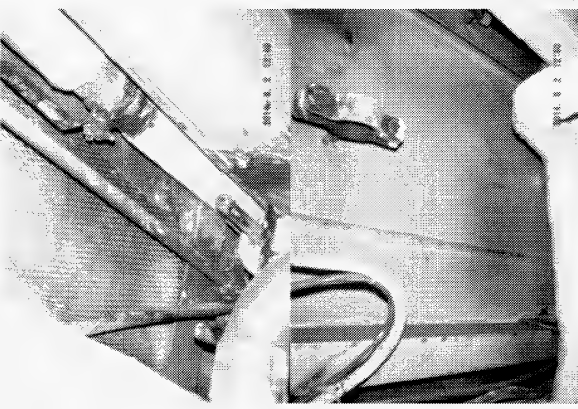
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

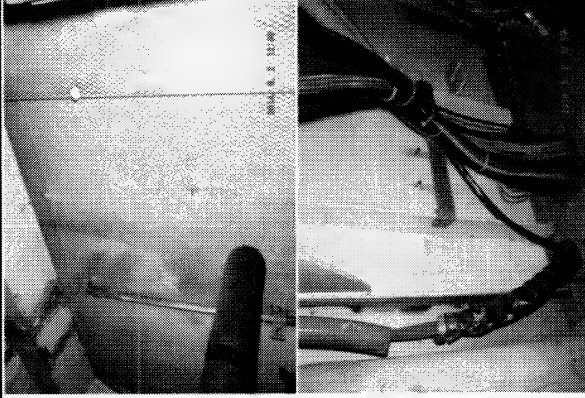
Deck 3 Boat Deck		Commanding Officer (B-3)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Fwd and outboard: Non-asbestos marine panel Aft and inboard: Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over asbestos tile and/or asbestos containing deck screed.	GOOD	LOW	HIGH	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Not accessed June 2014.					

Deck 3 Boat Deck		Commanding Officer's Washroom (B01)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Fwd: Non-asbestos marine panel. Rest: Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					

Deck 3 Boat Deck		Commanding Officer's Washroom (B01)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deck	Epoxy over possible asbestos deck screed.	GOOD	LOW	HIGH	Maintain in an intact condition. Sample screed prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	2013: Penetrations into bulkhead panels to be sealed. Not accessed June 2014.					

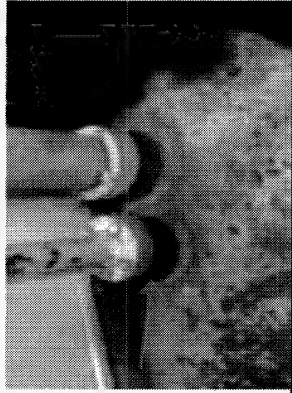
Starboard Alleyway Out (1)								
Deck 3	Boat Deck	Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
		Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
		Bulkhead	New non-asbestos marine panels.					
		Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
		Deck	Sheet flooring over asbestos tile and/or asbestos containing deck screed.	GOOD	LOW	HIGH	Maintain in an intact condition. Sample tile and screed prior to disturbance.	
		Other						
		Comments						

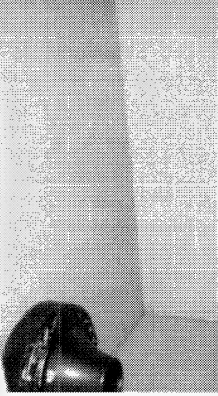

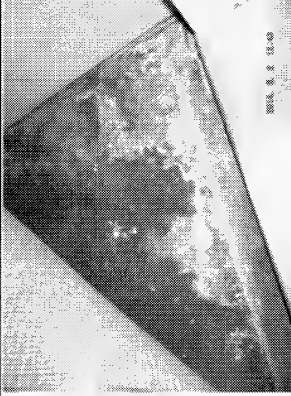
Deck 3 Boat Deck		Fan Room (B9)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	<p>Painted metal.</p> <p>Perforated metal over man-made mineral fibre insulation.</p>					




Deck 3 Boat Deck		Fan Room (B9)			
Bulkhead	<p>Inboard and Outboard: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.</p>				

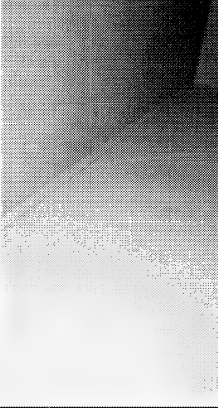

Deck 3 Boat Deck		Fan Room (B9)			
Lagging	Asbestos pipe insulation present. Armaflex insulation on ducts. Man-made mineral fibre insulation (Fibreglass-type). Red duct mastic contains asbestos.	FAIR	MEDIUM	LOW (textile)- HIGH (insulation)	Remove if possible, otherwise maintain in an intact condition.
Deck	Painted metal.				
Other	Caulking and Penetrations present: may contain older asbestos containing materials below				

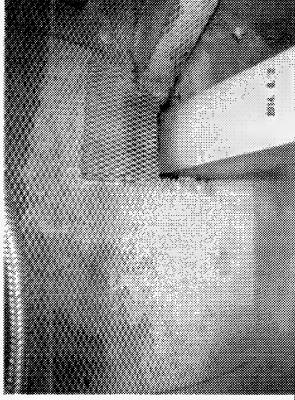
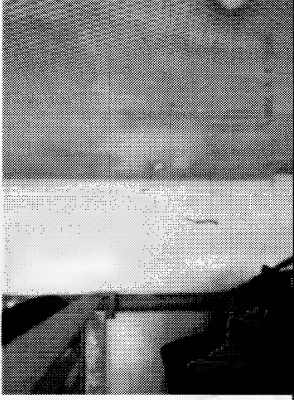



Deck 3 Boat Deck		Fan Room (B9)
Comments	2013: Possible original gaskets	

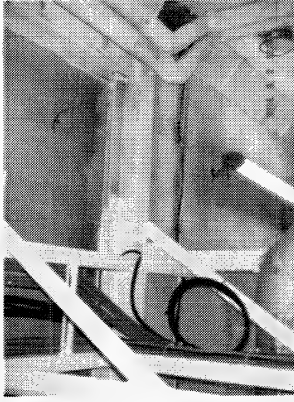
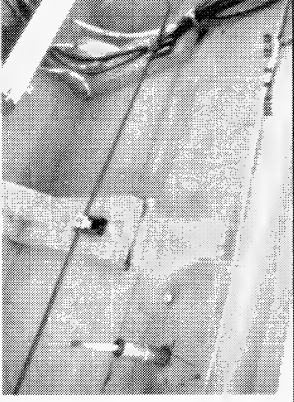
Deck 3 Boat Deck		Port Linen Locker				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Wood.					
Bulkhead	New non-asbestos marine panels.					
Lagging	None observed.					
Deck	Metal, possibly over asbestos containing floor tile and/or deck screed.	GOOD	LOW	LOW	Maintain in an intact condition. Sample screed prior to disturbance.	
Other						
Comments						


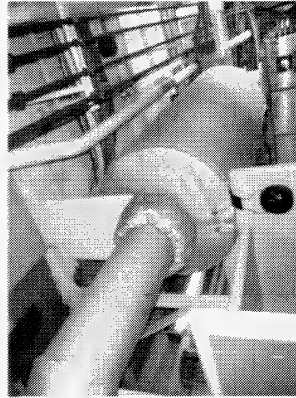

Deck 3 Boat Deck		Forward Athwartship Alleyway					
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture	
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.						
Bulkhead	Asbestos containing marine panel.	FAIR	HIGH				
	Non-asbestos marine panel.			MEDIUM	Maintain in an intact condition. Sample prior to disturbance.		
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.						
Deck	Sheet flooring over asbestos tile and/or deck screed.	GOOD	LOW	LOW	Maintain in an intact condition. Sample Prior to disturbance.		
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						
Comments							

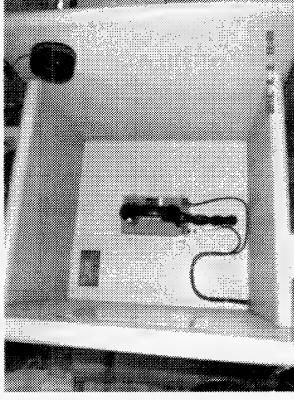
Deck 3 Boat Deck		Forward Stairwell (Boat Deck to Poop Deck)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.	GOOD				
Bulkhead	New non-asbestos marine panel.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over asbestos tile and/or deck screed. Stair treads.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

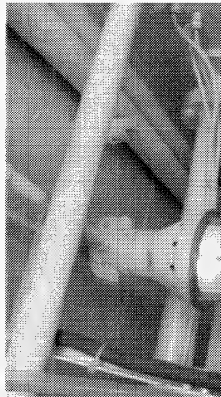


Deck 3 Boat Deck		Boat Gear Locker (B11)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Fwd and outboard: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.					
Lagging	None observed.					
Deck	Painted metal.					

Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

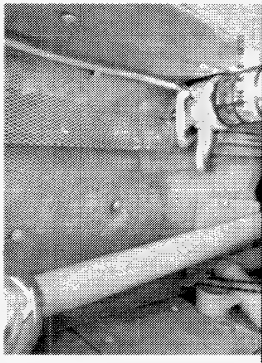
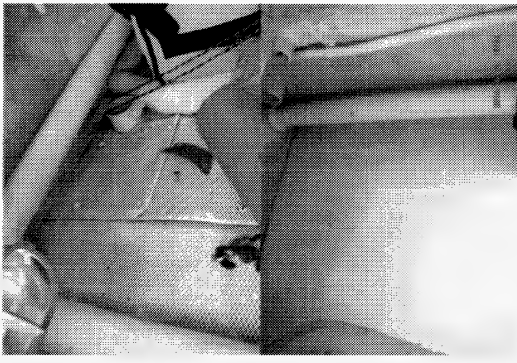
Deck 3 Boat Deck		Emergency Generator Room (B15)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation. Painted metal.					
Bulkhead	Perforated metal over man-made mineral fibre insulation. Painted metal.					

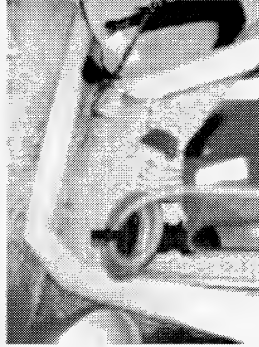

Deck 3 Boat Deck							Emergency Generator Room (B15)		
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture			
Lagging	<p>Pipe runs: Man-made mineral fibre insulation (Fibreglass-type).</p> <p>Pipe elbows: Cementitious elbows and fittings may contain asbestos.</p> <p>High temperature jacketing and metal mesh over man-made mineral fibre insulation.</p>				Maintain in an intact condition. Sample prior to disturbance.	 			
Deck	Painted metal.								

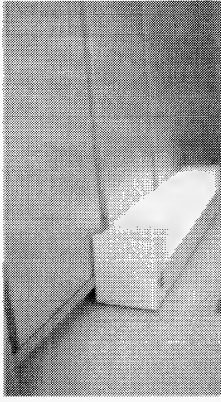


Deck 3 Boat Deck		Emergency Generator Room (B15)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Other	<p>Caulking and Penetrations present: may contain older asbestos containing materials below.</p> <p>Acoustic phone booth may have an asbestos liner or insulation inside the casing.</p>					
Comments						

Deck 3 Boat Deck							Battery Room (B13)			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture				
Deckhead	Perforated metal over man-made mineral fibre insulation. Painted metal.									
Bulkhead	Perforated metal over man-made mineral fibre insulation. Painted metal.									
Lagging	Pipe runs: Man-made mineral fibre insulation (Fibreglass-type). Pipe elbows: Cementitious elbows and fittings may contain asbestos. Red duct mastic contains asbestos.				Maintain in an intact condition. Sample prior to disturbance.					
Deck	Anti-skid coating.									

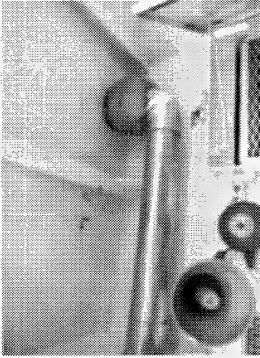
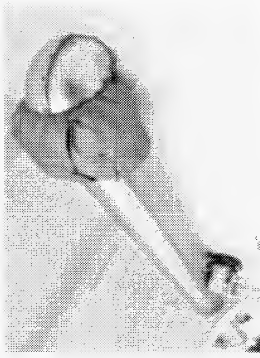
Deck 3 Boat Deck		Battery Room (B13)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

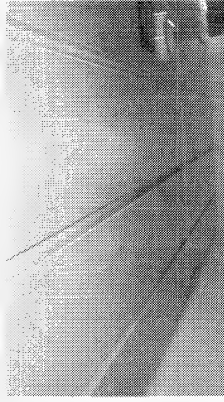

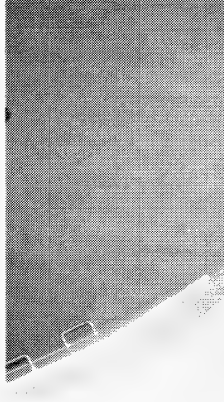
Deck 3 Boat Deck		SAR Equipment (B14)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Aft and outboard: Perforated metal over man-made mineral fibre insulation. Fwd and inboard: Painted metal.					



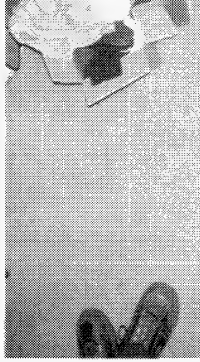
Deck 3 Boat Deck		SAR Equipment (B14)				
Lagging	Man-made mineral fibre insulation (Fibreglass-type). insulation on pipe runs. Cementitious elbows and fittings may contain asbestos. Red duct mastic contains asbestos.					
Deck	Anti-skid coating.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						


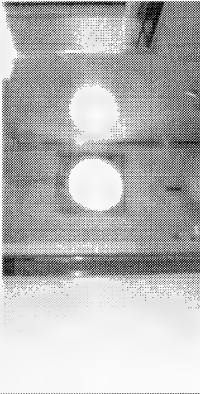
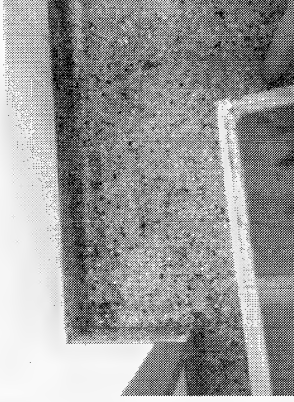
Deck 3 Boat Deck		Port Alleyway				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels.					
Lagging	None observed.					
Deck	Sheet flooring over possible asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	

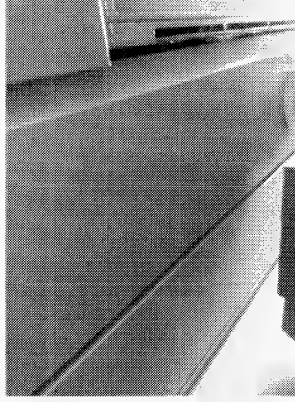
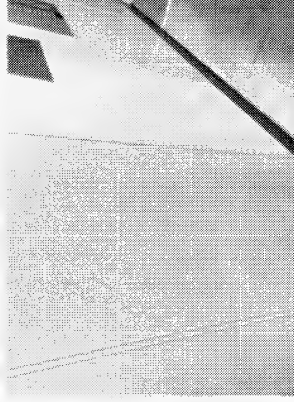
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

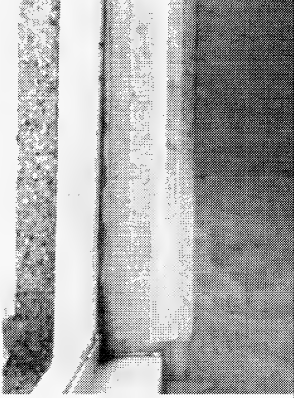
Deck 3 Boat Deck		Exterior Insulation (Port and Starboard Superstructure)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Painted metal.					
Bulkhead	Painted metal.					
Lagging	Metal over man-made mineral fibre insulation. 17oz Grey Canvas Jacketing over man-made mineral fibre insulation.				Maintain in an intact condition. Sample prior to disturbance.	
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

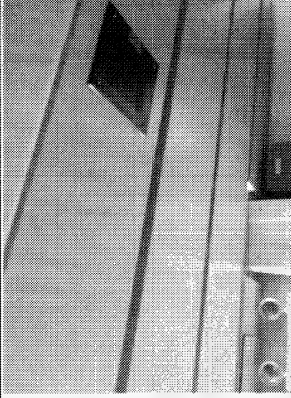

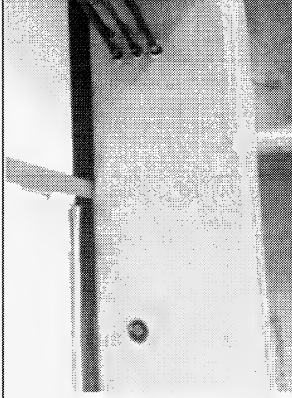
Deck 2 Poop Deck		Second Officer's Cabin (P3)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Fwd and outboard: Non-asbestos marine panel. Aft and inboard: Asbestos containing marine panels. Liner under window removed during VLE 2009-10.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

Deck 2 Poop Deck			Third Officer's Cabin (P-1)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture	
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.						
Bulkhead	Asbestos containing marine panels, except under window Liner under window removed during VLE 2009-10.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.		
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.						
Deck	Carpet over possible asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.		
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						
Comments							


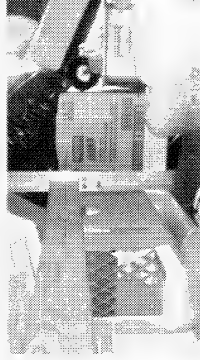
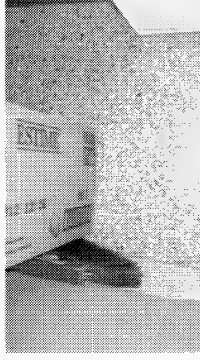
Deck 2 Poop Deck		Washroom				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy possibly over asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						


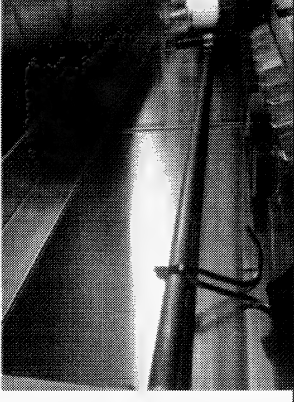
Deck 2 Poop Deck		Starboard Alleyway to Outside				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					


Deck	Sheet flooring over possible asbestos tile and/or asbestos containing deck screed.					Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						
Comments							



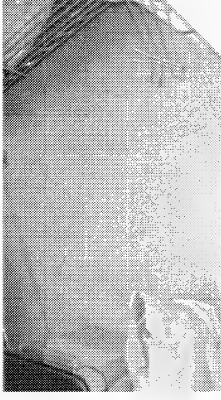
Deck 2 Poop Deck		Alley to Crew's Mess				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Inboard: Asbestos containing marine panel. Rest: Non-asbestos marine panel.	GOOD	HIGH	MEDIUM	2013: Maintain in an intact condition. Sample prior to disturbance. 2014: Observed to be in good condition.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over possible asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	

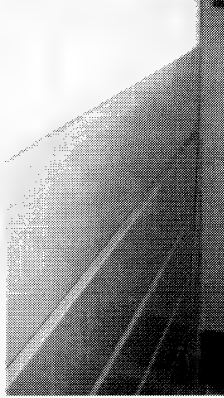

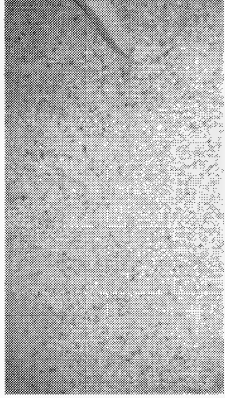
Deck 2 Poop Deck		Alley to Crew's Mess				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Penetrations in old marine panels					

Deck 2 Poop Deck		Stationery Locker				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy possibly over asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						


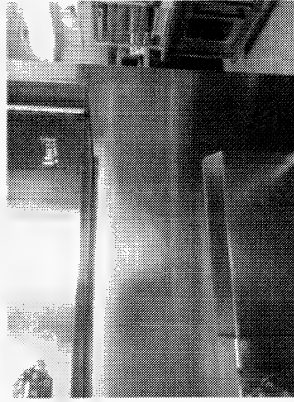
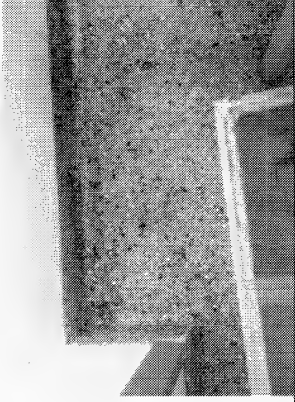
Deck 2 Poop Deck		Starboard Dry Stores Locker (suspected to formally have been the incinerator room)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Metal panels.					
Bulkhead	Metal panels.					
Lagging	None observed.					

Deck	Epoxy possibly over asbestos containing deck screed.					Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						
Comments							

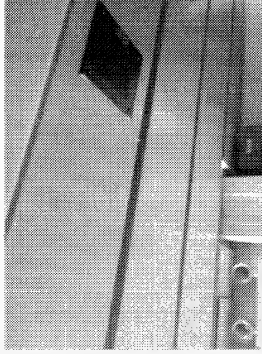


Deck 2 Poop Deck		Port Dry Stores Locker				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Metal panels over man-made mineral fibre insulation.					
Bulkhead	Metal panels over man-made mineral fibre insulation.					
Lagging	None observed.					
Deck	Epoxy possibly over asbestos containing floor tile and deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

Deck 2 Poop Deck		Crew's Mess (P13)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation. Liners removed during VLE 2009-10.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy possibly over asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Comments

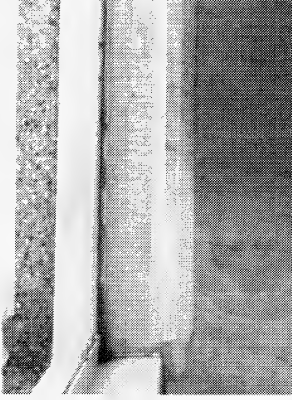
Deck 2 Poop Deck		Galley (P16)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Metal panels over man-made mineral fibre insulation. Liners removed during VLE 2009-10.				Maintain in an intact condition.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy possibly over asbestos containing floor tile and deck screed.				Maintain in an intact condition. Sample prior to disturbance.	

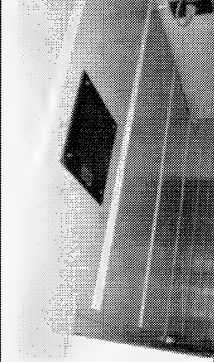
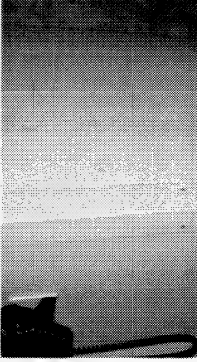
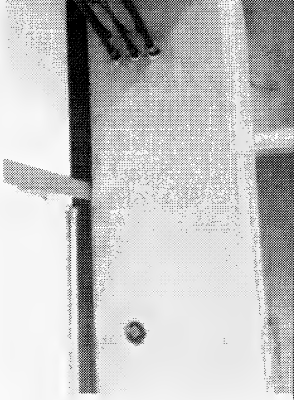
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						


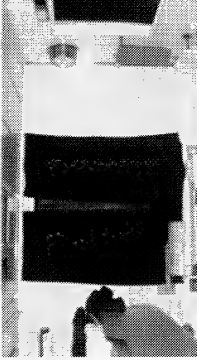

Deck 2 Poop Deck		Crew's Lounge and Canteen				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation. Liners removed during VLE 2009-10.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy possibly over asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	

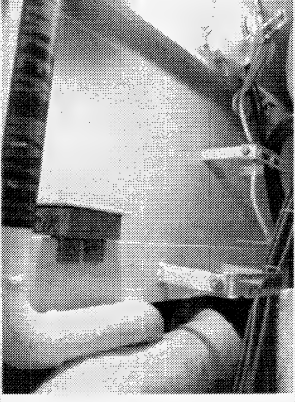


Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						


Deck 2 Poop Deck		Port Alley Out				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation. Liners removed during VLE 2009-10.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					

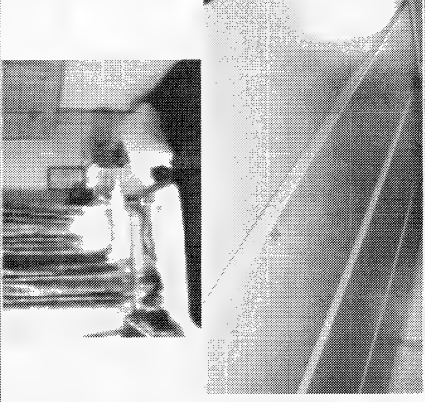
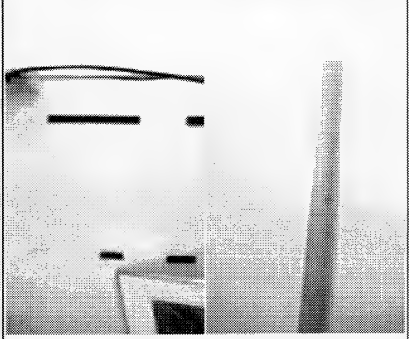
Deck	Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos)					Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						
Comments							


Deck 2 Poop Deck							Port Alley to Crew's Lounge		
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture			
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.								
Bulkhead	New non-asbestos marine panel. Asbestos containing marine panel.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.				
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.								
Deck	Sheet flooring over possible asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.				
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.								
Comments									


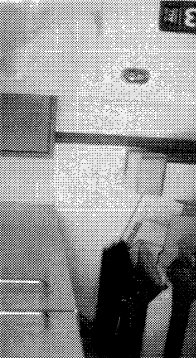
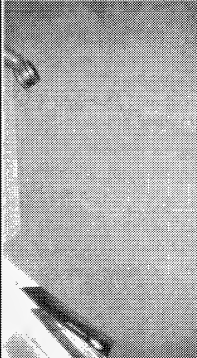
Deck 2 Poop Deck		Two Passengers (P12)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Non-asbestos marine panel. Asbestos containing marine panel. Liner under window removed during VLE 2009-10.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Not accessed 2014.					


Deck 2 Poop Deck		Fan Room (P10)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Painted metal.					
Bulkhead	Painted metal.					
Lagging	Post refit: Man-made mineral fibre insulation (Fibreglass-type) on pipe runs. Cementitious elbows and fittings may contain asbestos.	GOOD	MEDIUM	HIGH	Maintain in an intact condition. Sample prior to disturbance.	



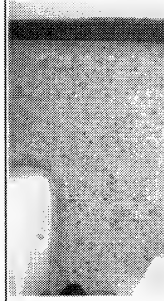

Deck	Painted metal.						
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						
Comments							

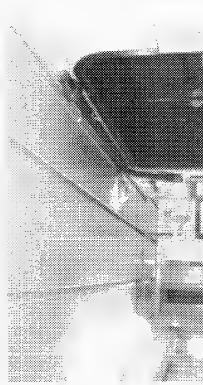

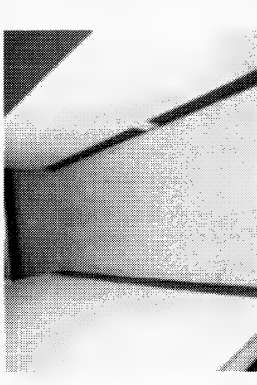
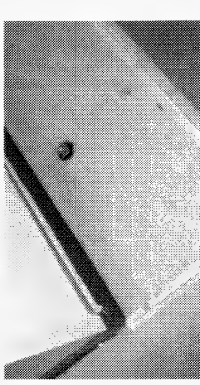
Deck 2 Poop Deck		Supply Officer (P6)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels, except under window Note: Liner under window removed during VLE 2009-10	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.				Maintain in an intact condition. Sample prior to disturbance.	

Deck 2 Poop Deck		Supply Officer (P6)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos)				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Not accessed 2014.					



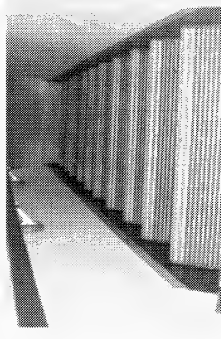
Deck 2 Poop Deck							Ship's Office Logistics (P2)		
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture			
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.								
Bulkhead	Asbestos containing marine panels, except under window Note: Liner under window removed during VLE 2009-10	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.				
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.								
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.				
Other	Caulking and Penetrations present: may contain older asbestos containing materials below								

Deck 2 Poop Deck		Ship's Office Logistics (P2)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Comments	2013: Penetrations in old Asbestos containing marine panels. 2014: Meeting in progress. Surveyed from door only.					

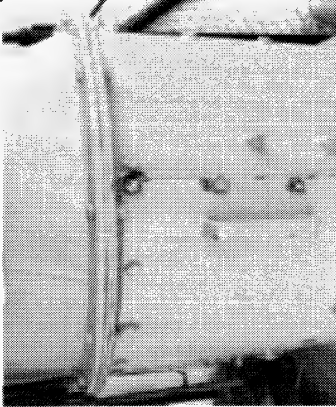
Deck 2 Poop Deck							Officer's Washroom (P4)			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture				
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.									
Bulkhead	Asbestos containing marine panels, except under window Note: Liner under window removed during VLE 2009-10	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.									
Deck	Epoxy over possible asbestos containing floor tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.									
Comments	2013: Recommend that cracks be sealed.									
										

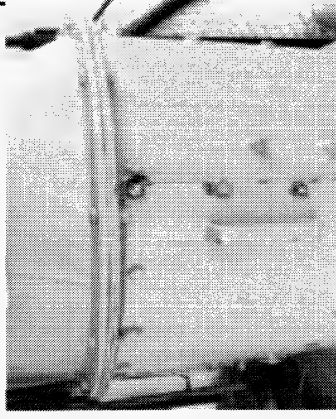
Deck 2 Poop Deck		Athwartship Alleyway (5) by Stairs				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Fwd: New non-asbestos marine panels over foil-faced man-made mineral fibre insulation. Aft: Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over possible asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	 

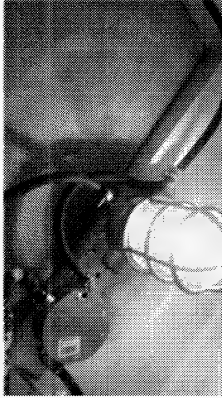
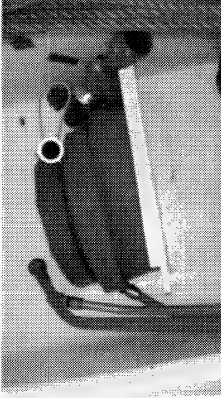
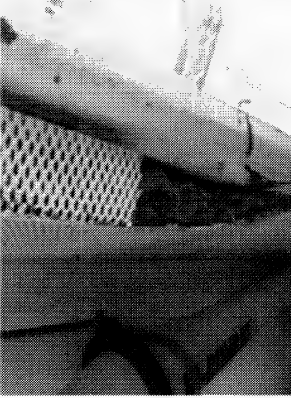
Deck 2 Poop Deck		Athwartship Alleyway (5) by Stairs				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

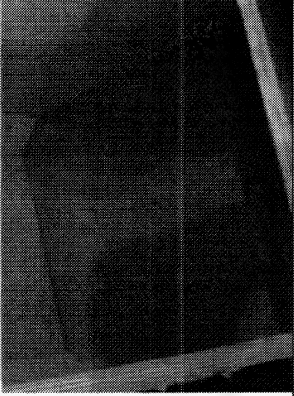
Deck 2 Poop Deck		Forward Stairs from Poop Deck to Upper Deck				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Lagging	None observed.					
Deck	Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	



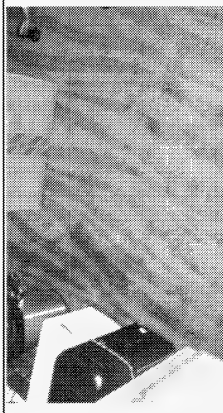
Deck 2 Poop Deck		Forward Stairs from Poop Deck to Upper Deck				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

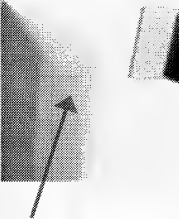
Deck 2 Poop Deck		Aft Vent to Auxiliary Engine Room – Exterior Gaskets				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	N/A					
Bulkhead	N/A					
Lagging	N/A					
Deck	N/A					
Other						
Comments	Ductwork gaskets are to be handled as asbestos containing.					






Deck 2 Poop Deck		Aft Fire Equipment Compartment				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Painted metal.					
	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Painted metal. Aft: Perforated metal over man-made mineral fibre insulation.					
Lagging	None observed.					

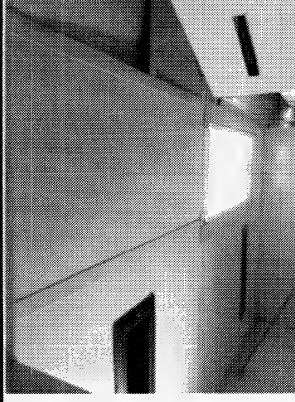
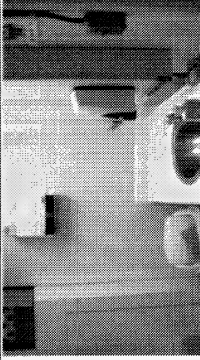
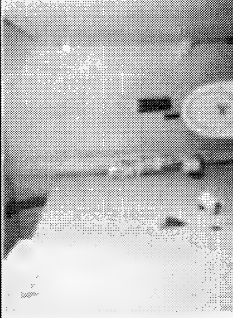
Deck	Painted metal.							
Other								
Comments								


Deck 1 Upper Deck			Senior Engineer (U17)			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	Good-Fair	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Post refit: None observed.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	


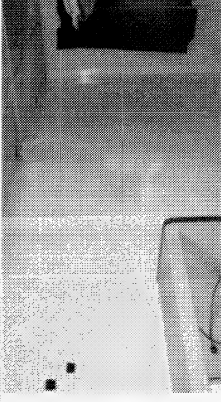

Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	2013: Seal seams of asbestos marine panels.					


Deck 1 Upper Deck		Senior Engineer's Washroom (U-19)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panel.					
Lagging	None observed.					
Deck	Epoxy over possible asbestos containing floor tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	


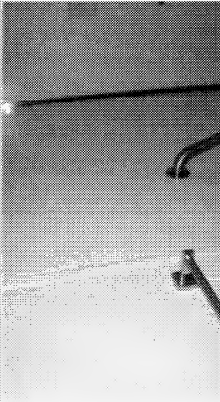

Other							
Comments							

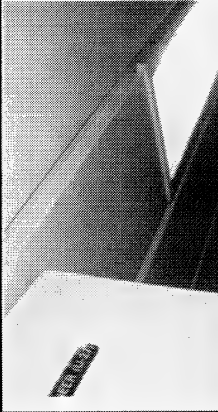
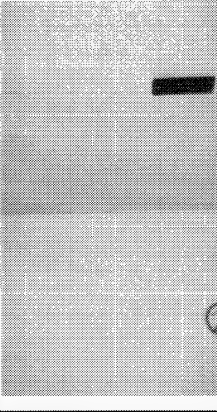
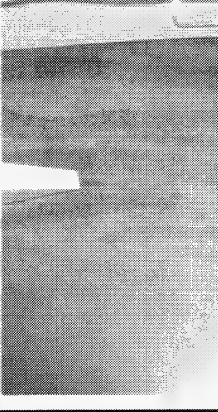
Deck 1 Upper Deck		Aft Crew's Washroom and Closet				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New marine panels may be over man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Textile over man-made mineral fibre insulation (Fibreglass-type).				Maintain in an intact condition. Sample prior to disturbance.	
Deck	Epoxy over possible asbestos containing floor tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	


Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

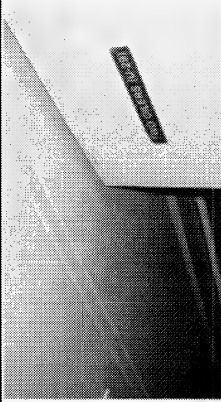
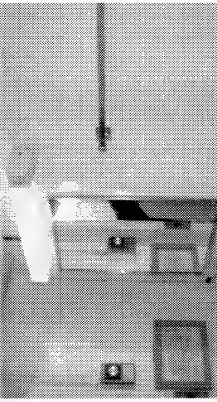

Deck 1 Upper Deck		Second Engineer (U23)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck Painted metal plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					


Comments		
2013: Some penetrations in old marine panels.		


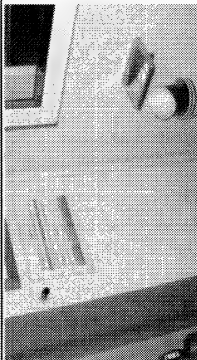

Deck 1 Upper Deck		Washroom (U21)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed.					
Deck	Epoxy over possible asbestos containing floor tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



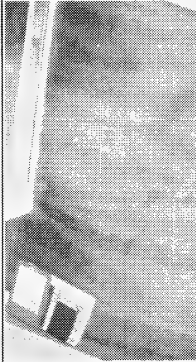
Deck 1 Upper Deck		Third Engineer (U27)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					

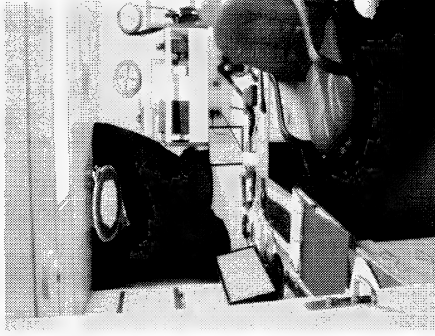
Deck 1 Upper Deck		Third Engineer (U27)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Comments	2013: Some penetrations in old marine panels. Not accessed 2014.					

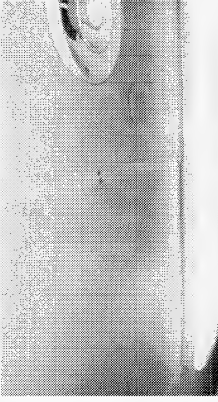
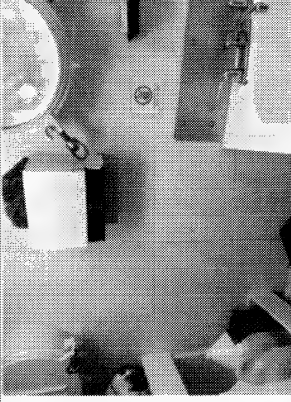
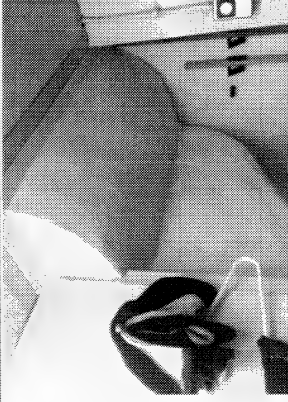
Deck 1 Upper Deck		Two Oilers (U29)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panels.	FAIR	HIGH		Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					

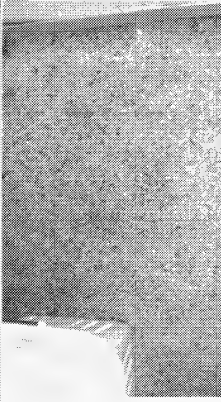
Deck 1 Upper Deck		Two Oilers (U29)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Comments	2013: Some penetrations in old marine panels. Not accessed 2014.					

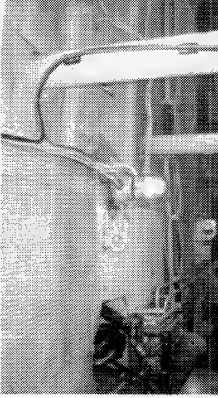
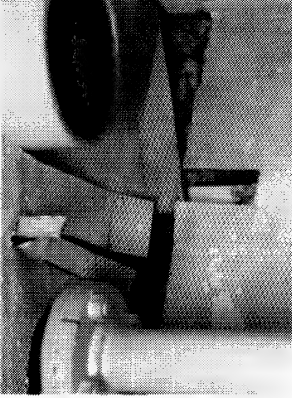
Deck 1 Upper Deck		Two Passengers (U31)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	HIGH		Maintain in an intact condition. Sample prior to disturbance.	
	New non-asbestos marine panels.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

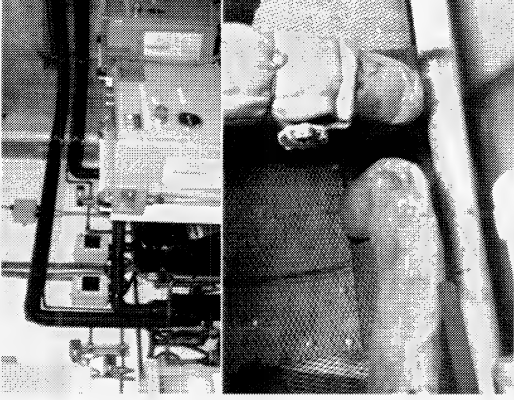

Deck 1 Upper Deck							Cook and Steward (U33)		
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture			
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.								
Bulkhead	Asbestos containing marine panels.	FAIR	HIGH						
	New non-asbestos marine panels.			MEDIUM	Maintain in an intact condition. Sample prior to disturbance.				
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.								
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent				Maintain in an intact condition. Sample prior to disturbance.				
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.								
Comments	Note-also known as seaman cabin								



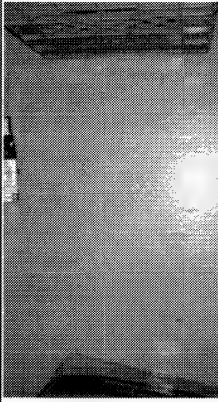
Deck 1 Upper Deck Chief Cook (U35)						
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
	New non-asbestos marine panels.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.	FAIR	MEDIUM	LOW (textile)- HIGH (insulation)	Remove if possible, otherwise maintain in an intact condition.	
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	2013: Penetrations in old marine panels. No Access – Resident Sleeping Not accessed 2014.					


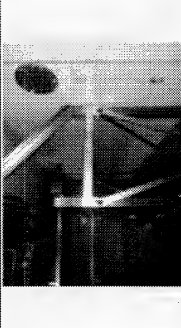

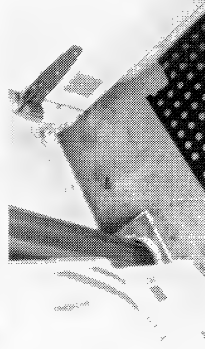
Deck 1 Upper Deck		Laundry Room (U39)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Fwd and Outboard: New non-asbestos marine panels. Rest: Painted metal.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Asbestos containing pipe insulation. Navy board insulation on ducts.	FAIR	HIGH	HIGH	Maintain in an intact condition.	



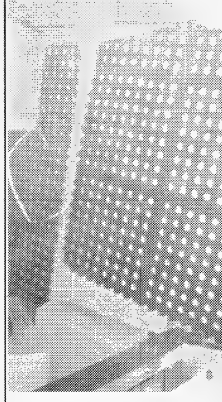
Deck	Epoxy over possible deck screed (screed may contain asbestos).							Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.								
Comments	Door – No Asbestos Observed.								


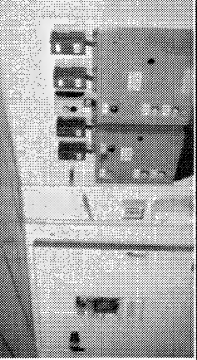
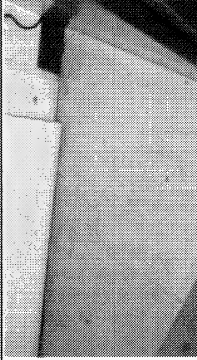
Deck 1 Upper Deck		Steering Gear Compartment				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Perforated metal over man-made mineral fibre insulation.					




Deck 1 Upper Deck		Steering Gear Compartment				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Lagging	<p>Armaflex insulation.</p> <p>High temperature jacketing and metal mesh over man-made mineral fibre insulation.</p>	GOOD	MEDIUM	MEDIUM	Maintain in an intact condition.	
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						


Deck 1 Upper Deck		Loan Clothing / Stores				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Outboard: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.					
Lagging	Armaflex insulation.					
Deck	Painted deck screed over asbestos block insulation.				Maintain in an intact condition.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	2013: Deck sample taken. February 2012. During refit, a layer of asbestos block insulation was found below deck screed					


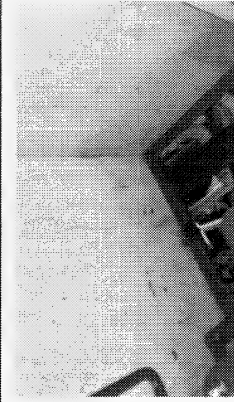
Deck 1 Upper Deck		Cold Storage				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels.					
Bulkhead	Marine panels. Liners removed during VLE 2009-10.					
Lagging	Armaflex insulation.					
Deck	Painted metal.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

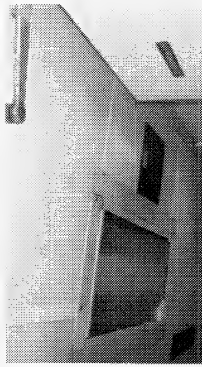
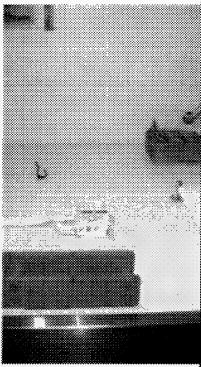
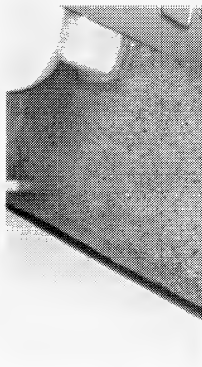
Deck 1 Upper Deck		Cool Storage				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels.					
Bulkhead	New non-asbestos marine panels.					
Lagging	Armaflex insulation.					
Deck	Painted metal.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						




Deck 1 Upper Deck		Alley (6) between Laundry Room and Emergency Steering				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over possible asbestos tile and/or deck screed(screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						




Deck 1 Upper Deck		Two Seamen (U38)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.	GOOD				
Bulkhead	Inboard: Asbestos containing marine panels. Rest: New non-asbestos marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Post refit: None observed.					
Deck	Carpet over possible asbestos tile and/or deck screed over asbestos block insulation.	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					


Deck 1 Upper Deck		Two Seamen (U38)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Comments	2013: Some penetrations in bulkhead partially plugged. Not accessed 2014 but viewed from door.					




Deck 1 Upper Deck		EngineRoom Escape				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Painted metal.					
Bulkhead	Painted metal.					
Lagging	None observed.					
Deck	N/A					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Deck 1 Upper Deck		Forward Crew's Washroom (U-20)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy over possible deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Not accessed 2014.					


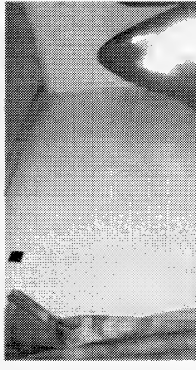
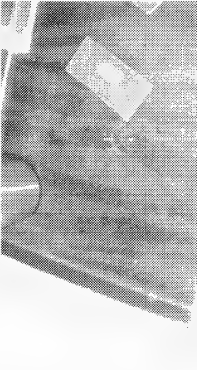
Deck 1 Upper Deck		Linen Locker by U26 and U30				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels.					
Bulkhead	Asbestos containing marine panel.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Painted metal over possible deck screed (screed may contain asbestos).	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

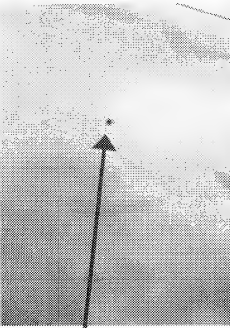
Deck 1 Upper Deck		Two Seamen (U36)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	POOR TO FAIR	HIGH		Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					


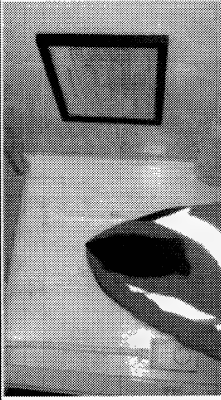

Deck 1 Upper Deck		Two Seamen (U36)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Comments	2013: Penetrations in old marine panels. Not accessed 2014.					

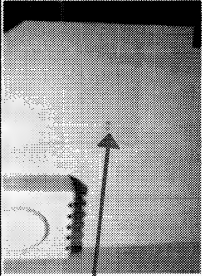
Deck 1 Upper Deck		Two Passengers (U32)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Rest: New non-asbestos marine panels. Inboard: Asbestos containing marine panel.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Not accessed 2014.					


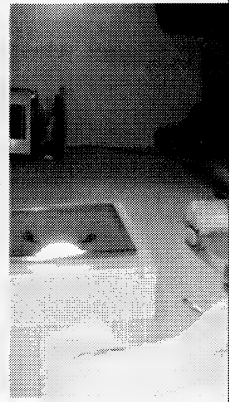

Deck 1 Upper Deck		Linen Locker in Aft Athwartship Alley				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Wood over possible man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed.					
Deck	Deck screed over asbestos block insulation.	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

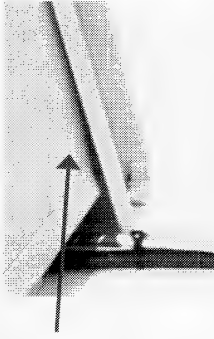
Deck 1 Upper Deck		Two Seamen (U30)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Rest: New non-asbestos marine panels. Inboard: Asbestos containing marine panel.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					


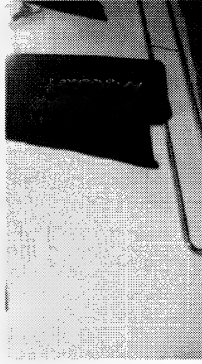
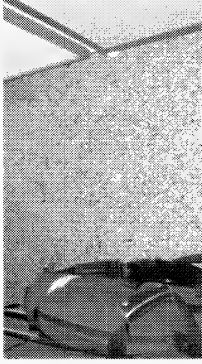
Deck 1 Upper Deck		Two Seamen (U30)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Comments	2013: Penetrations in old marine panels by TV. Not accessed 2014.					

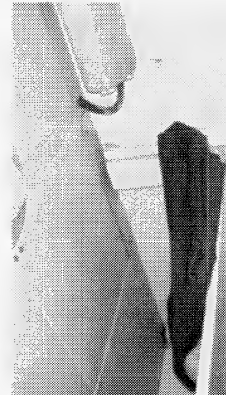
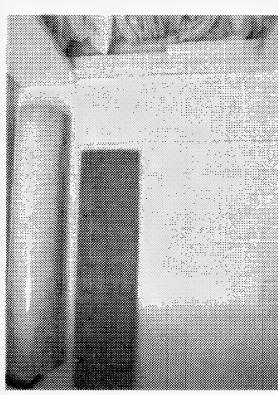

Deck 1 Upper Deck		Two Passengers (U26)/Leading Seaman				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Rest: New non-asbestos marine panels. Inboard: Asbestos containing marine panel.	FAIR	HIGH		Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Deck 1 Upper Deck		Two Seamen (U30)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Comments	2013: Some partially plugged penetrations in patch. Not accessed 2014.					




Deck 1 Upper Deck		Two Leading Seaman (U-22)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	Rest: New non-asbestos marine panels. Inboard: Asbestos containing marine panel.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					


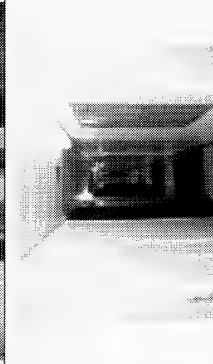


Deck 1 Upper Deck		Two Leading Seaman (U-22)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Comments	2013: Metal flashing is loose. Some penetrations in old marine panels. Not accessed 2014.					

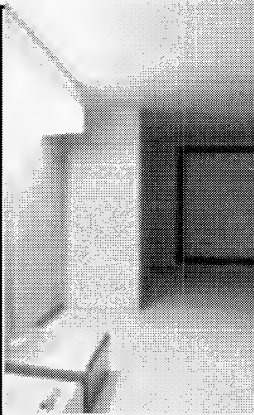

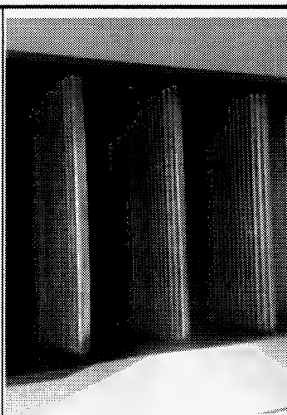
Deck 1 Upper Deck		Sick Bay (U16)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation. Liners removed during VLE 2009-2010					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy over asbestos block. VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

Linen Locker by U34							
Deck 1	Upper Deck	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead		New non-asbestos marine panels.	GOOD				
Bulkhead		Asbestos containing marine panel.	FAIR	HIGH	MEDIUM	Repair damaged marine panels with sheet metal flashing or equivalent. Caulk all smaller cracks and joints with fire rated caulking.	
Lagging		None observed.					
Deck		Deck screed.	GOOD	LOW	LOW	Maintain in an intact condition.	
Other		Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments							

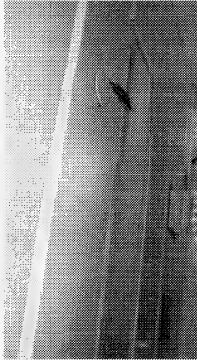
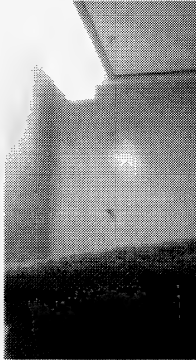

Starboard Alleyway								
Deck 1	Upper Deck	Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
	Deckhead		New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
	Bulkhead		New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
	Lagging		None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
	Deck		Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos) and thermobestos block insulation.	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
	Other		Caulking and Penetrations present: may contain older asbestos containing materials below.					
	Comments							

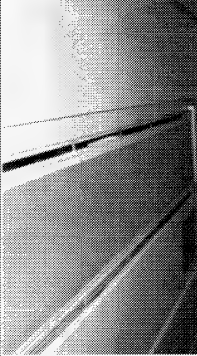
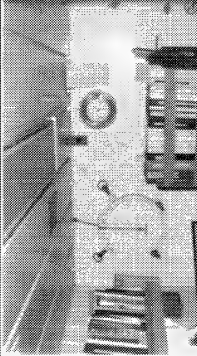
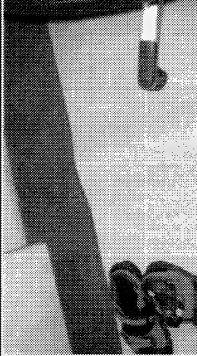
Deck 1 Upper Deck							Aft Alley between Stbd and Port Alleyways			
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture				
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.									
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.									
Deck	Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos) and thermobestos block insulation.	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.									
Comments										

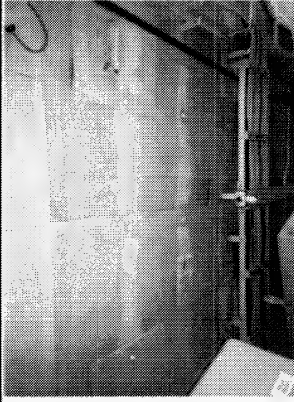
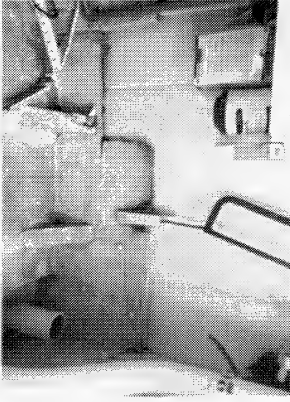
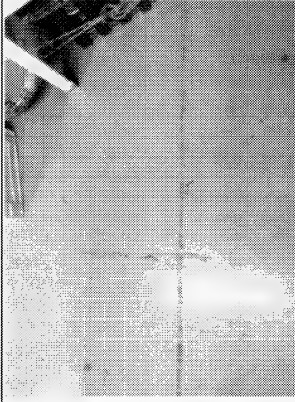
Deck 1 Upper Deck		Port Alleyway				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos) and thermobestos block insulation.	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

Deck 1 Upper Deck			Aft Stairs from Poop Deck to Upper Deck				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture	
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.						
Bulkhead	New non-asbestos marine panels.						
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.						
Deck	Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos).	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.		

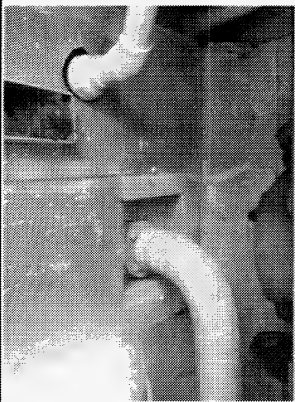
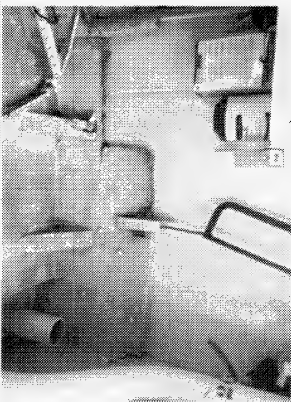
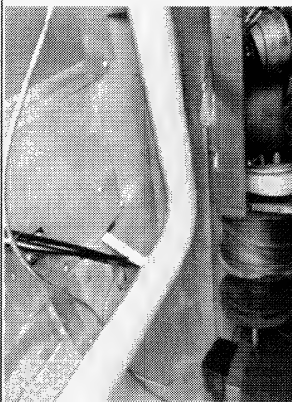
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

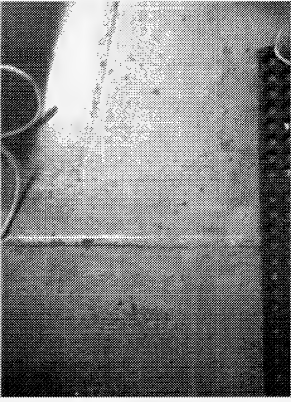
Deck 1 Upper Deck		Winchman (U14)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos) and thermobestos block.	GOOD	LOW	LOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Formerly Senior Bosun.					

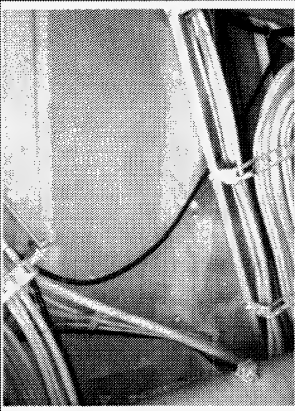

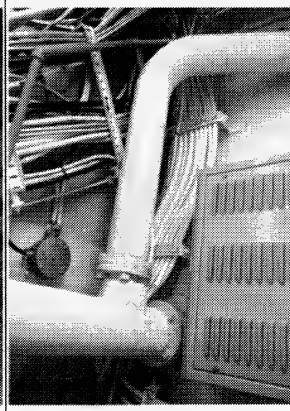
Deck 1 Upper Deck		Bosun (U15)				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.	GOOD				
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos) and thermobestos block.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Formerly Chief Cook					


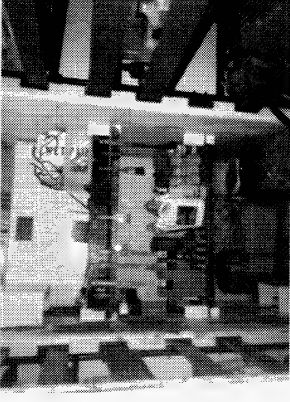
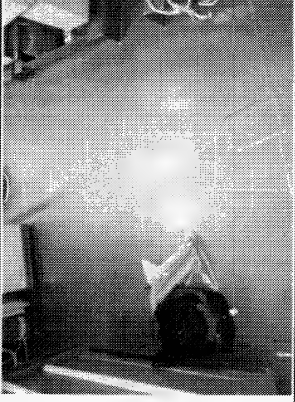
Deck 1 Upper Deck		Bosun's Stores				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Perforated metal over man-made mineral fibre insulation. Painted metal.					
Lagging	None observed.					
Deck	Painted metal.					

Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

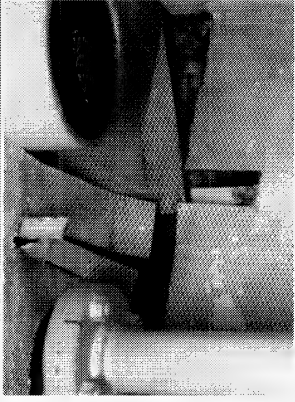
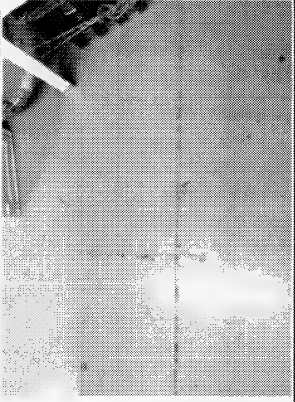
Deck 1 Upper Deck		SCR Drive Room				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	15" Return: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.					
Lagging	Possible parged pipe elbows exist which may contain asbestos.					


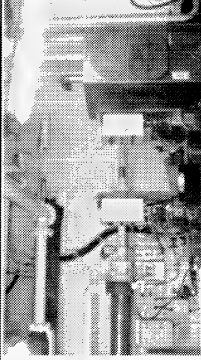
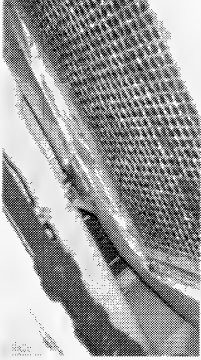

Deck	Painted metal.						
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.						
Comments							

Deck 1 Upper Deck		Fire Equipment Compartment				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Outboard, by way of generator and 15" Return: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.					
Lagging	Possible padded pipe elbows exist which may contain asbestos.					

Deck 1 Upper Deck		Paint Locker				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Painted metal.					
Lagging	None observed.					
Deck	Painted metal.					

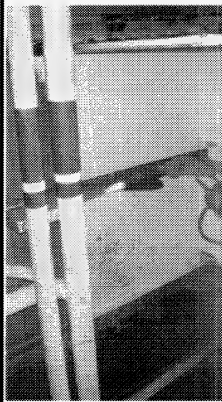
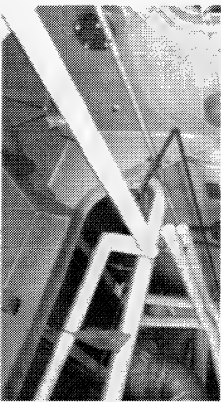


Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						


Deck 1 Upper Deck		Workshop				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Inboard: Painted metal. Rest: Perforated metal over man-made mineral fibre insulation.					
Lagging	Textile over man-made mineral fibre insulation (Fibreglass-type). Possible parged pipe elbows exist which may contain asbestos.					
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

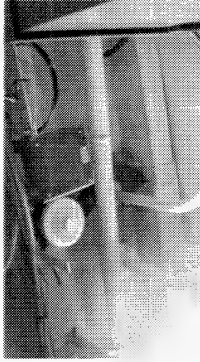
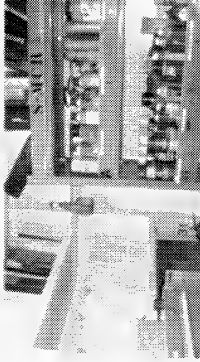
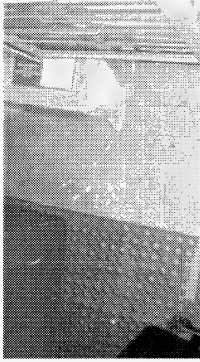
Deck 0 Baseline		Engine Room				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	15" Return and a 10'x4' area: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.					
Bulkhead	Aft: Painted metal. Rest: Perforated metal over man-made mineral fibre insulation.					
Lagging	Asbestos containing pipe insulation. Non-asbestos pipe insulation. High temperature jacketing and metal mesh over man-made mineral fibre insulation. Navy board over man-made mineral fibre insulation.	FAIR	MEDIUM	LOW (textile)- HIGH (insulation)	Remove if possible, otherwise maintain in an intact condition.	
Deck	Checker plate metal catwalk.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					

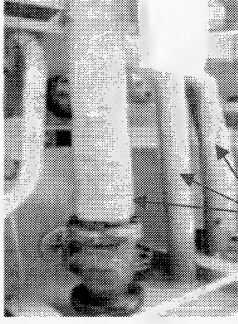

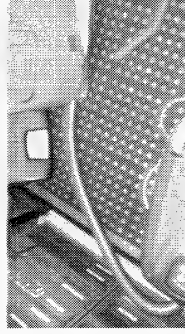
Comments	Maintain asbestos containing lagging in good condition.
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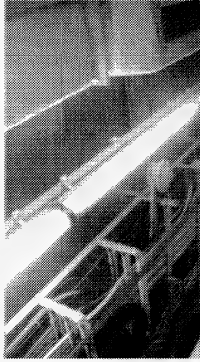


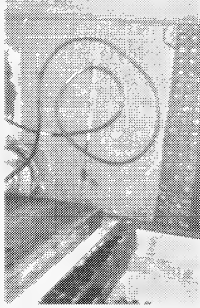


Deck 0 Baseline		Auxiliary Machine Room				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation. Painted metal.					
Bulkhead	Painted metal.					
Lagging	Asbestos containing pipe insulation. Non-asbestos pipe insulation. High temperature jacketing and metal mesh over man-made mineral fibre insulation. Navy board over man-made mineral fibre insulation.	FAIR	MEDIUM	LOW (textile)- HIGH (insulation)	Remove if possible, otherwise maintain in an intact condition.	 
Deck	Checker plate metal catwalk.					

Deck 0 Baseline		Auxiliary Machine Room				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Maintain asbestos containing lagging in good condition.					

Deck 0 Baseline		MCR Stores				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Fwd and Outboard: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.					
Lagging	None observed.					
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

Deck 0 Baseline		Electrician's Workshop				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation. Painted metal.					 Showing location of pipe insulation removed by glove bag.
Bulkhead	Painted metal.					
Lagging	New non-asbestos pipe insulation. Asbestos containing pipe insulation removed by LGF Environmental on May 31, 2012					
Deck	Checker plate metal. Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

Deck 0 Baseline		Control Room				
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man-made mineral fibre insulation.					
Bulkhead	Perforated metal over man-made mineral fibre insulation.					
Lagging	New non-asbestos pipe insulation. Navy board over man-made mineral fibre insulation. Asbestos containing pipe insulation removed by LGF Environmental on May 31, 2012					 Showing location of pipe insulation removed by glove bag.
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

Appendix 1 Evaluation of Asbestos Containing Materials (ACM)

Evaluation of asbestos containing materials is based on the condition of the material and its accessibility. Following are the guidelines used to evaluate ACMs and the action, if any, required to safely manage them.

Spray Applied Fireproofing, Insulation and Texture Finishes

In evaluating the condition of ACM spray applied as fireproofing, thermal insulation or texture, decorative or acoustic finishes, the following criteria apply;

GOOD	Surface of material shows no significant signs of damage, deterioration or delamination. Up to one percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the surveyor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.
POOR	Sprayed materials show signs of damage, delamination or deterioration. More than one percent damage to surface of ACM spray.

Mechanical Insulation

In evaluating the condition of mechanical insulation (on boilers, breeching, ductwork, piping, tanks, equipment etc.) the following criteria are used:

GOOD	Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.
FAIR	Minor penetration damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.
POOR	Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

Non-Friable and Potentially Friable Materials

Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos Concrete products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material will be treated as a friable product.



Accessibility

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

Access (A)	Areas of the building within reach (from floor level) of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level.
Access (B)	Frequently entered maintenance areas within reach of maintenance staff, without need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.
Access (C) Exposed	Areas of the building above 8'0" where use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.
Access (C) Concealed	Areas of the building which require removal of a building component including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces etc. Observations are limited to the extent visible from the access points.
Access (D)	Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc., where demolition or the ceiling, wall or equipment etc., is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the surveyor's ability to visually examine the materials in Access D.



Appendix 2 Bulk Sample Analysis Results



End of report. This page intentionally left blank.



Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: XPAC CCG Bartlett ChiefEngineer <Bartlett-ChiefEngineer@pac.dfo-mpo.gc.ca>
Sent: January 22, 2016 3:30 PM
To: CCGS Bartlett - Chief Officer
Cc: CCGS Bartlett - Commanding Officer; Gress Connie; CCGS Bartlett - SeniorEngineer;
CCGS Bartlett - MCR
Subject: RE: White Crew 2016 Record of Asbestos Training.doc

Thanks for the list Kevin,

I think we should keep it in mind whenever we can manage to fit in a full day alongside VCGB with not much else to do. The Awareness Training can be done in half a day, one in AM and one in PM to get both watches trained. I expect that North West Environmental can put on a training session with very little notice if required. And I expect that the training is cheap (I probably have a record of the cost in an email on file).

I've cc'd Connie so that she's aware of the deficiency, and that all employees working in an environment with ACMs (Asbestos Containing Materials), should at least be aware of the dangers.

Please note that I have an Asbestos Awareness booklet, if you want to pass it around and make it mandatory reading – and/or have someone scan it to P-Drive for inclusion in Famming folder.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

Cell: [REDACTED]

Tellular: [REDACTED]

Sat Phone: [REDACTED]

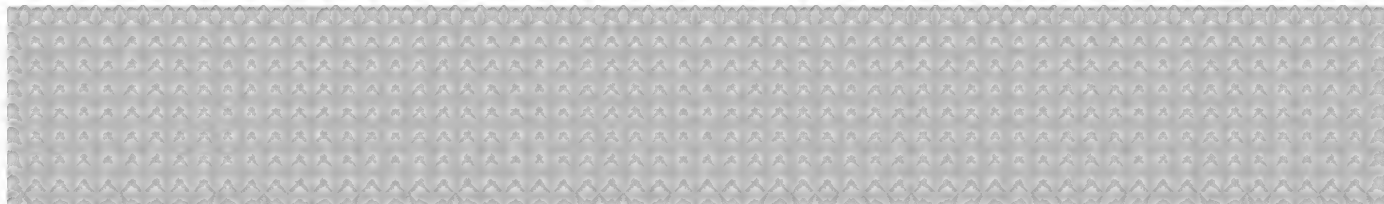
bartlett-chiefengineer@pac.dfo-mpo.gc.ca

BartlettChief@gmail.com for files above 700 kb

From: CCGS Bartlett - Chief Officer
Sent: 22 January 2016 14:45
To: CCGS Bartlett - Chief Engineer
Subject: White Crew 2016 Record of Asbestos Training.doc

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS Bartlett - Chief Officer
Sent: October 31, 2016 8:54 AM
To: CCGS Bartlett - Commanding Officer
Subject: Comments in Ch/O handover notes red to white



Ryan Gurr

Chief Officer, CCGS Bartlett
Canadian Coast Guard

BartlettCHO@bar.ccg-sngcc.gc.ca

Chief Officer Cell: [REDACTED]

Ship's Cell: [REDACTED]

Victoria Base Landline: 250 480 2692

Iridium Satellite: [REDACTED]

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS Bartlett - Chief Engineer
Sent: May 18, 2017 7:07 PM
To: CCGS Bartlett - SeniorEngineer; CCGS Bartlett - MCR
Cc: CCGS Bartlett - Commanding Officer; CCGS Bartlett - Chief Officer; CCGS Bartlett
Subject: FW: Bartlett Bid con questions
Attachments: F1782-17C810 Bartlett Bid Conference - Minutes.docx; F1782-17C810 CCGS Bartlett Spec May2017 Alongside refit.DOCX

FYI

New emails just rec'd. Official & latest copy of Refit PWGSC Spec attached.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

Cell: [REDACTED]

BartlettCE@bar.ccs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB



Government
of Canada

Gouvernement
du Canada

Canada

From: Camilleri, Edward [mailto:Edward.Camilleri@dfo-mpo.gc.ca]

Sent: 15 May 2017 12:54

To: CCGS Bartlett - Chief Engineer

Subject: FW: Bartlett Bid con questions

Matt,

Attached is apparently the latest spec. The changes noted in the bid con minutes are not in the spec but are straightforward. I have stapled those minutes as page 2 in my printed copy of the spec.

Regards,

Edward Camilleri

CCG Marine Engineering | GCC Ingénierie navale

250 363 6490

From: David Castle [mailto:David.Castle@pwgsc-tpsgc.gc.ca]

Sent: 2017-May-15 12:23 PM

To: Camilleri, Edward

Subject: FW: Bartlett Bid con questions

Hi Edward, it was the minutes that I was thinking about. I have also attached the latest version of the spec – the changes noted in the bid con minutes have been changed in the spec but we should confirm that Mark is aware.

See you Wed at 0800.

Regards,
Dave

Dave Castle
Supply Specialist | Acquisitions, Marine
Public Services and Procurement Canada | Government of Canada
David.Castle@pwgsc-tpsgc.gc.ca Tel : 250-217-6555 | Fax : 250-363-3960

Spécialiste d'approvisionnement | Approvisionnements, marine
Services publics et Approvisionnement Canada / Gouvernement du Canada
David.Castle@pwgsc-tpsgc.gc.ca Tel : 250-217-6555 | Fax : 250-363-3960

Serving Government, Serving Canadians | Au service du gouvernement, au service des Canadiens

From: David Castle
Sent: April-20-17 10:38 AM
To: 'Wright, Edward' <Edward.Wright@DFO-MPO.GC.CA>
Cc: Camilleri, Edward <Edward.Camilleri@dfo-mpo.gc.ca>; BartlettCE@bar.ccg-ngcc.gc.ca
Subject: RE: Bartlett Bid con questions

Hi Ed, here is a copy of the Bid Conf. minutes I sent out today.

Any questions please let me know.

Regards,

Dave Castle
Supply Specialist | Acquisitions, Marine
Public Services and Procurement Canada | Government of Canada
David.Castle@pwgsc-tpsgc.gc.ca Tel : 250-217-6555 | Fax : 250-363-3960

Spécialiste d'approvisionnement | Approvisionnements, marine
Services publics et Approvisionnement Canada / Gouvernement du Canada
David.Castle@pwgsc-tpsgc.gc.ca Tel : 250-217-6555 | Fax : 250-363-3960

Serving Government, Serving Canadians | Au service du gouvernement, au service des Canadiens

From: Wright, Edward [<mailto:Edward.Wright@DFO-MPO.GC.CA>]
Sent: April-19-17 2:21 PM
To: David Castle <David.Castle@pwgsc-tpsgc.gc.ca>
Cc: Camilleri, Edward <Edward.Camilleri@dfo-mpo.gc.ca>; BartlettCE@bar.ccg-ngcc.gc.ca
Subject: Bartlett Bid con questions

Hi Dave,
I think that went quite well today. Thought I would put my notes together for you to summarize some of the changes/clarifications we found at the viewing.

11.1.C.3 The lower identified hole must be repaired with a 12" doubler plate instead of an insert.

11.1.C.5 Gooseneck is not required, only a mushroom head vent as described in 11.1.C.6

11.1.D.1.3 NDT weld inspection must be quoted on as dye penetrant test.

11.2 Access to the electronics room must be maintained to the extent possible.

11.2 Contractor must be responsible for testing for any possible asbestos. Remediation by 1379.

11.4.C fuel station save alls are 2" NPT Double bottom save alls are 1.5" NPT.

14.1.C While conducting megger survey the contractor must comply with the Coast Guard Technical bulletin on terminal tightness (I wil provide this tomorrow)

That is all I have.

Ed

Edward Wright

Senior Vessel Maintenance Manager | Gestionnaire principal de l'entretien des navires

Marine Engineering | Ingénierie Navale

Integrated Technical Services | Services Techniques Intégrés

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Cell [REDACTED]

**CCG Bartlett Alongside Refit
Bidder's Conference Minutes**

XLV-6-39248

Solicitation No: F1782-17C810

Date: April 19, 2017 at 10:00 hrs

Location: Conference Room, 21 Huron St., Victoria, BC.

Chaired by: PWGSC Contracting Authority – Dave Castle

Attendees: Technical Authority - CCGS – Edward Wright for Edward Camilleri
Inspection Authority – CCGS - Edward Wright for Edward Camilleri
Chief Engineer – CCGS – Ross McKenzie

Present Bidders:

ORDER of BUSINESS

1. CALL TO ORDER at 10:00 hrs.
 - Introductions
2. OPENING REMARKS
Edward Camilleri will be managing this contract for CCGS.
3. SCHEDULE
 - Work Period May 17 to June 14, 2017
 - Bid Close: April 26th, 2017
4. REVIEW OF SOLICITATION DOCUMENTS
 - **NO ISSUES**
5. REVIEW OF SPECIFICATIONS & VESSEL VIEWING
 - Copy of Megger testing template and Technical Bulletin on terminal tightness will be distributed – see attached.

The following revisions are required for the specification;

11.1.C.3 The lower identified hole must be repaired with a 12" doubler plate instead of an insert.

11.1.C.5 Gooseneck is not required, only a mushroom head vent as described in 11.1.C.6

11.1.D.1.3 NDT weld inspection must be quoted on as dye penetrant test.

11.2 Access to the electronics room must be maintained to the extent possible.

11.2 Contractor must be responsible for testing for any possible asbestos. Remediation by 1379.

11.4.C fuel station save alls are 2" NPT Double bottom save alls are 1.5" NPT.

14.1.C While conducting megger survey the contractor must comply with the Coast Guard Technical bulletin on terminal tightness (See attached). Note: this instruction relates only to work in the specification.

Thank you to all who attended.

**CCG Bartlett Alongside Refit
Bidder's Conference Minutes**

XLV-6-39248

Dave Castle

No information has been removed or severed from this page

CCGS BARTLETT

Alongside Refit – May / June 2017

Specification No: F1782-17C810

Work Period:

May 17 to June 14, 2017

At:

21 Huron Street, Victoria BC V8V 4V9

Viewing date:

April 19, 2017

at 21 Huron Street Victoria BC

10:00 am to 12:00 pm

Prepared by:

Marine Engineering Western Region

P.O. Box 6000

9860 W. Saanich Rd.

Victoria BC

V8L 4B2

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G1.0 GENERAL

GENERAL NOTES

G 1.1 Vessel Particulars

G 1.1.1 Details

Name:	CCGS Bartlett
Official No.:	328107
IMO No.:	7006778
Type:	Medium Navais Tender
Class:	Home Trade I
Year Built:	1969 at Marine Industries Ltée, Sorel QC
Principle Dimensions	
Length Overall:	57.68 m (189 Ft 3 ins)
Length B.P.:	51,74 m (169 ft 9 ins)
Breadth, molded:	12.95 m (42 Ft 6 ins)
Loaded Draft:	3.81 m (12.5 Ft)
Tonnage, displ:	1686.8 Long Tons (98% consumables with deck and hold cargo)
Tonnage, Gross:	1387 tons
Propulsion	2 x Mirrlees Blackstone KLSD M6 6-cylinder, 1565 kW (2100 bhp) total, with 2 C.P. propeller shafts and 1 bow thruster

G 1.1.2 Equipment - Not Used

Equipment	Make	Model	Serial#

G 1.2 References

G 1.2.1 Regulations

G 1.2.1.1 All regulations, standards, publications, and procedures listed below are to be used as reference. The Contractor will ensure all work completed in the specification are done to all pertinent federal and provincial regulations and

standards. CCG procedures are to be used as a guide if no other regulation takes precedence.

G 1.2.1.2 In the following table “Included – Yes” means that the document will be provided by CCG to the contractor. “Included – No” means that the contractor must obtain the document separately. “Included – N/A” means that the document is not relevant to this specification.

FSM Procedures	Title	Included Yes/No
FSM	Fleet Safety Manual (Latest Edition)	Yes
Ship Specific	Vessel Specific - Asbestos Risk Assessment Report and Management Plan	Yes
Ship Specific	Vessel Specific – Lead Paint Test Report	Yes
Publications		
TP 127	Ships Electrical Standards	No
TP 3669	Standards for Navigating Appliances and Equipment	N/A
TP3177	Standard for the Control of Gas Hazards in Vessels to be Repaired or Altered	No
TP 11469	Guide to Structural Fire Protection	No
TP 14231	Marine Occupational Health and Safety Program	No
TP 14612	Procedures for approval of Life-saving appliances and fire safety systems, Equipment and Products	No
TP 4414 E	Guidelines Respecting Helicopter Facilities on Ships.	N/A
IEEE 45	Institute of Electrical and Electronics Engineers, Recommended Practice for Electrical Installations on Shipboard	No
70-000-000-EU-JA-001	Specification for the Installation of Shipboard Electronic Equipment	N/A
IEC 60533	Electrical and Electronic installations in ships – Electromagnetic Compatibility	No
IEC 60945	Maritime Navigation and Radio communication equipment and systems – methods of testing and required test results.	N/A

Standards		
CSA W47.1	Certification of Companies for Fusion Welding of Steel Structures Division 2 Certification	No
CSA W47.2	Certification of Companies for Fusion Welding of Aluminum	No
CSA W59	Welded Steel Construction – Metal Arc Welding	No
CSA W59.2	Welded Aluminum Construction	No
ISO 9712:2005	International Standards for NDT	No
18-080-000-SG-001	Welding of Ferrous Materials	No
18-080-000-SG-002	Welding of Aluminum and Aluminum Alloys	No
SSPC	The Society for Protective Coatings	No
ISO 8501-1:2007	Preparation of steel substrates before application of paints and related products	No
ISO 10816-1:1995	Mechanical vibration -- Evaluation of machine vibration by measurements on non-rotating parts -- Part 1: General guidelines	No
Regulations		
MOHS	Maritime Occupational Health and Safety	No
CSA	Canada Shipping Act 2001	No
Machinery Regs.	Marine Machinery Regulations (SOR/90-264)	No
Hull Regs.	Hull Inspection Regulations (C.R.C., C. 1432)	No
Canada Labour Code	Canada Labour Code (R.S.C., 1985, c. L-2)	No
WorkSafe BC.	Occupational Health and Safety (OHS) Regulation http://www2.worksafebc.com/publications/OHSRegulation/Home.asp?_ga=1.6448368.352535453.1408987357	No

G 1.2.2 Guidance Drawings and Reference Documents

G 1.2.2.1 The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
B10-77-3	VLE Phase 2 General Arrangement-Profile Sheets 1 to 3 of 3 Rev 3
B10-43-1	Insulation Sheet 1 of 1 Rev 0.PDF
B10-1372-005	VLE Phase 2 Accommodation Insulation Plan.pdf

G 1.2.2.2 The following documents are provided. The Interspec is a paint specification that must be followed.

Document Number	DOCUMENT TITLE
NW 10143	B10 - Lead test results 2009 May 8.pdf
n/a	Interspec - Bartlett Coating Specification 04 09 2014 Rev1.pdf

G 1.2.3 Tanks

G 1.2.3.1 Listed are the tanks found on board the CCGS Bartlett with their Location by frame number and capacity (Where available). These are to be used as reference only and will not supersede any specification.

TCM Field No.	Tank name	Location	Capacity (m ³)
3L031	E. Generator Fuel Tank	Fr 11 – 13 Bridge Deck	
n/a	Lube Oil Storage Tanks A	Fr 23 – 25 Main Deck	9.91
n/a	Lube Oil Storage Tanks B	Fr 23 – 25 Main Deck	8.49
n/a	Lube Oil Storage Tanks C	Fr 23 – 25 Main Deck	8.49
3L029	Day Fuel Tank	Fr 36.5 – 38 Main Deck	5.09
3L013	Flume Stabilization Tank	Fr 51 – 56 below deck	99.13
3L028	Aft Peak W.B. Tank	Fr -0 - 4	45.98
3L027	Sterntube Compartment Void	Fr 4 - 13	N/A
3L025	DB Fuel Tank No. 3 (void)	Fr 13 - 26	
3L024	Sea Box Starboard	Fr 25 - 26	N/A
3L022	DB Fuel Tank No. 2 Port	Fr 26 - 44	45.43
3L023	DB Fuel Tank No. 2 Starboard	Fr 26 - 44	43.83
3L021	Sea Boxes (port & starboard)	Fr 43 - 45	N/A
3L020	Sea Bay Across	Fr 44 - 45	

3L018	Clean Fuel Tank Port	Fr 46 – 51	10.98
3L019	Clean Fuel Tank Starboard	Fr 46 - 51	10.98
3L016	Oil Fuel Bunker Port	Fr 46 – 51	22.06
3L017	Oil Fuel Bunker Starboard	Fr 46 - 51	22.06
3L013	Dump Tank Port	Fr 51 – 56	29.62
3L014	Dump Tank Starboard	Fr 51 -56	29.62
3L011	Drainwell Port	Fr 56 - 57	N/A
3L012	Drainwell Starboard	Fr 56 - 57	N/A
3L008	DB Fuel Tank No. 1 Port	Fr 56 - 71	51.03
3L009	DB Fuel Tank No. 1 Starboard	Fr 56 - 71	51.03
3L005	Cofferdam	Fr 71 - 72	
3L006	FW Tank Port	Fr 72 - 80	26.20
3L007	FW Tank Starboard	Fr 72 - 80	26.20
3L004	Bow Thruster Compartment	Fr 80 - 87	N/A
3L003	Chain Locker	Fr 87 - 92	N/A
3L002	Fore Peak Water Ballast Tank	Fr 92 - 102	39.81

G 1.2.4 Abbreviations

ACM	Asbestos Containing Material
CA	Contract Authority (PWGSC)
CCG	Canadian Coast Guard
CFM	Contractor Furnished Material and/or equipment
CLC	Canada Labour Code
CSA	Canadian Standards Association
CWB	Canadian Welding Bureau
DFO/CCG	Department of Fisheries and Oceans, Canadian Coast Guard
DFT	Dry Film Thickness
FSSM or FSM	Fleet Safety Manual (CCG)
FSR	Manufacturer's Field Service Representative
GSM	Government Supplied Material and/or equipment
HC	Health Canada
IACS	International Association of Classification Societies
IEEE	The Institute of Electrical & Electronic Engineers Inc.
ITS – ME	Integrated Technical Services, Marine Engineering
ITS – E&I	Integrated Technical Services, Electronics & Informatics
LOA	Length Overall
MSDS	Material Safety Data Sheet
NDT	Non Destructive Testing
OHS	Occupational Health and Safety
PWGSC	Public Works and Government Services Canada
SSMS	Safety & Security Management System
RO	Recognized Organization as defined by Canada Shipping Act.
TA	Technical Authority -CCG Superintendent, Marine Engineering Western Region, or her delegated Representative.
TBS	Treasury Board of Canada Secretariat
TCMS	Transport Canada Marine Safety
TI	Technical Inspector – CCG delegated.
VCA	Vessel Condition Assessment
VLE	Vessel Life Extension
WCB	Workers' Compensation Board of North West Territories

G 1.2.5 List of GSM Material

G 1.2.5.1 The following items are supplied as GSM.

[illegible]

G 1.3 Conditions and Definitions

G 1.3.1 The following conditions and definitions are applicable to all work contained in the Specifications and are intended to outline the quality of workmanship and practice that is the minimum acceptable level:

- a) the word "install" means that the Contractor must connect mechanically and electrically and provide the labour and materiel to complete the installation;
- b) the word "reinstall" means a piece of equipment that the Contractor has effected repairs on and is to be returned/installed in its original location and be mechanically and electrically connected. The Contractor must provide the labour and materiel to complete the reinstallation;
- c) the word "remove" means that the Contractor must provide all labour and materiel to remove the unit, equipment, materiel, or system in its entirety. Part of the removal process is to blank openings, restore insulation and paint;
- d) the word "relocate" means that the Contractor must provide all labour and material to remove the unit, piece of equipment, or system and to install the same unit, piece of equipment, or system in the new location;
- e) the term "or equivalent" means a substitute which has equal characteristics i.e. (size, materiel type, life, weight, input, and output) as approved by the TA. A comparison of the general specifications must be provided to the TA for the equipment specified and the "or equivalent" (i.e. old compared to the new);
- f) the term "overhaul" as applied to any mechanical equipment, structure or system comprises: disassembly into component parts; cleaning examination of parts for defects; gauging of parts for wear; reporting of parts worn beyond specification limits or otherwise defective and reassembly followed by specification adjustments; tests; and functional trials;
- g) the word "disconnect" means the Contractor must mechanically and electrically disconnect the piece of equipment of all piping, wiring, seatings and other attachments permitting the removal of the unit as a whole;
- h) the word "disassemble" means that the Contractor must provide all labour to take apart, piece by piece, the equipment, machinery or system to be examined or repaired;

- i) the word "reassemble" means that the Contractor must provide all labour and material to put together, piece by piece, the equipment, machinery or system on completion of examination or repair;
- j) the words "Additional Work Procedures" means the procedures as defined in ANNEX G - PROCEDURE FOR PROCESSING UNSCHEDULED WORK and includes any additional work required on a system, sub-system or equipment which the original specification did not specify;
- k) the word "calibrate" means the adjustment of readings and measurements to a known standard;
- l) the word "check" means that the Contractor must provide labour to find faults by sighting, feeling or listening. The checking of any equipment does not involve the disturbance or removal of parts, components or sub-assemblies;
- m) the word "examine" means that the Contractor must provide labour for the process of systematically examining, checking and testing equipment, records or administrative procedures to detect actual or potential defects or errors;
- n) the word "test" means that the Contractor must provide labour to conduct the operation of a unit in relation to a stated standard or procedure;
- o) the words "set-to-work" means the tuning, alignment and adjustment of equipment/systems required subsequent to satisfactory installation. Inspection to make the equipment/systems ready for technical acceptance trials;
- p) the word "trials" is an element of QA that means an action(s) by which the Contractor proves by a visual or instrumental presentation that the equipment or system satisfies the requirements of the specified trials agenda; and
- q) the term "functional test" means operation of a piece of equipment in all its normal operating modes and throughout its operating range to establish that it will perform its designed function within normal operating parameters as indicated in the manufacturer's documentation.

G 1.4 Miscellaneous Information

G 1.4.1 Occupational Health and Safety

- G 1.4.1.1 The Contractor and all sub-contractors must follow Occupational Health and Safety (OHS) procedures in accordance with applicable federal and provincial OHS regulations ensuring that Contractor activities are carried out in a safe manner and do not endanger the safety of any personnel. The Contractor and

Contractor's employees will not have access to the vessel's washrooms and crew mess facilities. The Contractor must provide the necessary amenities as required.

G 1.4.1.2 Not Used.

G 1.4.1.3 When the Contractor works on the vessel while in the Care and Custody of the Canadian Coast Guard, the Safety Management System of CCG must be followed.

G 1.4.1.4 The Contractor must identify a specified person that is responsible for the safety management of the work site. The Safety Manager must insure that daily safety rounds are carried out and that safety issues are identified and safety precautions are maintained.

G 1.4.1.5 Areas that pose a hazard as a result of the specification work are to be secured and clearly identified by the Contractor with signage to advise and protect all personnel from the hazard in accordance with applicable regulations.

G 1.4.2 Lead Paint and Paint Coatings

G 1.4.2.1 The Contractor must not use lead based paints.

G 1.4.2.2 CCG ships have been painted with lead based paints in the past and as a result some of the Contractor's processes such as grinding, welding and burning may release this lead from the coatings. The CCG will provide a lead test report from 2009 titled: "B10 - Lead test results 2009 May 8.pdf".

G 1.4.3 Asbestos Containing Materials (ACM)

G 1.4.3.1 The Contractor must use insulation that contains 0% ACM.

G 1.4.3.2 The Contractor will be supplied the most recent Asbestos Risk Assessment Report and Asbestos Management Plan by CCG prior to commencement of work.

G 1.4.3.3 Handling of any asbestos containing materials must be performed by trained personnel and/or a company certified in the removal of asbestos in accordance with Federal, Provincial and Municipal regulations.

G 1.4.3.4 The Contractor must provide the TA with disposal certificates for all asbestos containing material removed from the vessel indicating that the disposal was in accordance with Federal, Provincial and Municipal regulations in effect.

G 1.4.3.5 The Contractor must provide an "Observation Report (OR)" with reference to any concerns or intentions in regards to asbestos containing materials not already specified. The Contractor is to identify any materials that are suspected to contain

asbestos prior to any work being completed. Any approved work resulting from the OR will follow the Additional Work Procedures.

G 1.4.4 Confined Spaces

- G 1.4.4.1 Prior to commencing work in any confined space, the Contractor must ensure that a qualified person issues a "Gas Free Certificate" for that space. Certificates must specify, "Safe for persons" or "safe for hot work" as appropriate. Contractor must adhere to the safety management system requirements as determined in the Pre-Work Meeting. All copies of certificates generated are to be provided to the TA in accordance with the Documentation section of the General Notes.
- G 1.4.4.2 Any entry into confined spaces onboard the vessel during the contract period must be conducted in accordance with the safety management system as determined in the Pre-Work Meeting.

G 1.4.5 Hot Work

- G 1.4.5.1 The Contractor must, as a minimum, ensure the following items are followed when conducting any hot work:
- a) The compartment(s) affected must be certified gas free by a qualified person. The Contractor must provide all certificates to the TA in accordance with the Documentation section of the General Notes. Certificates must specify, "Safe for persons" or "safe for hot work" as appropriate. The Contractor must post a copy of all certificates at the entrance to the affected spaces;
 - b) All portable combustible materials within 2m of hot work must be removed from the vicinity;
 - c) Protective material must be used to prevent the spread of sparks, protecting electrical cables and other services;
 - d) Fire sentries must be provided in each space and in the adjacent space where welding, grinding, or burning is being carried out on bulkheads, deck-heads or decks. Fire sentries must be provided with an appropriate fire extinguisher (Contractor supplied) and must be trained in its use. The fire sentry must maintain a watch in his designated area for at least thirty (30) minutes after any hot work has been completed.
- G 1.4.5.2 Any hot work carried out onboard the vessel during the contract period must be conducted in accordance with the safety management system. A copy of the site generated hot work permits must be provided to the TA in accordance with the

Documentation section of the General Notes named in accordance with the specification item generating the required work.

G 1.4.6 Work Aloft

- G 1.4.6.1 Any work aloft onboard the vessel during the maintenance/refit period must be conducted in accordance with the safety management system. Notices must be placed to prevent operation of Radars while personnel are working aloft on the mast or on the wheelhouse top.

G 1.4.7 Electrical Equipment

- G 1.4.7.1 When working on electrically operated equipment, the following precautions must be taken at a minimum:

- a) All electrical equipment undergoing work must be isolated at the main power and alternate distribution panel;
- b) Electrical lock-outs must be used to isolate the equipment and electrical caution tags posted at the main power and distribution panel on those switches supplying equipment under maintenance and verification made at the terminals to ensure power is not present.
- c) Only after completion of the work must the lock-outs and electrical caution tags be removed and the switches engaged.

- G 1.4.7.2 Any lock-out requirements onboard the vessel during the contract period must be conducted in accordance with the safety management system.

- G 1.4.7.3 The TA must be notified of all such ongoing work.

G 1.4.8 Workplace Hazardous Materials Information System (WHIMS)

- G 1.4.8.1 The Contractor must provide the TA with Material Safety Data Sheets (MSDS) for all Contractor and sub-contractor supplied WHIMS controlled products. MSDS sheets are to be the formats requested in the Documentation section of the General Notes.
- G 1.4.8.2 All MSDS sheets must be maintained in accordance with OHS procedures.
- G 1.4.8.3 The TA will provide the Contractor with access to MSD sheets for all controlled products on the ship for all specified work items on request.

G 1.4.9 Smoking in the Work Space

- G 1.4.9.1 The Contractor must ensure compliance with the Non- Smokers' Health Act. The Contractor must ensure that there is absolutely no smoking onboard the vessel by their employees, sub-contractors, including the employees of any sub-contractors.

G 1.4.10 Touch-up / Disturbed Paint

- G 1.4.10.1 The Contractor must prepare and coat all touch-up work in accordance with the paint specification provided for the particular area involved in accordance with the Interspec - Bartlett Coating Specification 04 09 2014 Rev1.pdf.

G 1.4.11 Contractor Furnished Materials (CFM) and Tools

- G 1.4.11.1 The Contractor must ensure replacement material such as jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings etc. are in accordance with the equipment manufacturer's drawings, manuals and/or instructions.
- G 1.4.11.2 Where no particular item is specified or where substitution must be made, the Contractor must submit an Observation Report indicating the substitution or item not specified to the TA. The Contractor must provide information about materials used, certificate of grade and quality of various materials to the TA prior to use.
- G 1.4.11.3 The Contractor must provide all equipment, devices, tools and machinery such as crane, staging, scaffolding, hoarding, and rigging necessary for the completion of the work in this specification.
- G 1.4.11.4 The Contractor must deliver and store all new CFM equipment at their facility. The CFM must be stored in a secure, environmentally controlled space in accordance with the equipment storage section of this specification.

G 1.4.12 Government Supplied Materials (GSM) & Tools

- G 1.4.12.1 All tools are Contractor supplied unless otherwise stated in the technical specifications.
- G 1.4.12.2 Where tools are supplied by the TA they must be returned by the Contractor in the same condition as when they were borrowed. Borrowed tools must be inventoried and signed for by the Contractor on receipt and return to the TA.
- G 1.4.12.3 Any GSM not specifically stated in the Technical Specification must be received by the Contractor and stored in accordance with the Equipment Storage section of this specification. These activities are to be covered by the Procedures for Design Change or Additional Work. (PWGSC 1379).

G 1.4.13 Storage

- G 1.4.13.1 Equipment (i.e. covers, cowlings and other items that may need to be removed and stored) must be stored in accordance with the equipment manufacturer's or equipment vendor's specific storage instructions. The Contractor must make these instructions available to the TA.
- G 1.4.13.2 All equipment and items must be stored in such a manner so as to be easily accessible for inspection. No items are to be stored directly on floors.

G 1.4.14 Regulatory Inspections and/or Class Surveys

- G 1.4.14.1 The Contractor must contact, coordinate, schedule, and be completely prepared for all regulatory inspections and surveys by the applicable authority: i.e. TCMS, HC, Environment Canada or others as indicated by individual specifications.
- G 1.4.14.2 Documentation generated by the above inspections and/or surveys indicating that the inspections and/or surveys were conducted (i.e. original signed and dated certificates) must be provided to the TA in accordance with the "Documentation" Section of these General Notes.
- G 1.4.14.3 The Contractor must not substitute inspection by the TA for the required regulatory inspections.
- G 1.4.14.4 The Contractor must provide timely advance notification (minimum of 2 working days) of scheduled regulatory inspections to the TA so they may witness the inspection.
- G 1.4.14.5 The Contractor must pay all costs and fees associated with TCMS, HC, Environment Canada, or any other Inspection required by the specification unless otherwise indicated.

G 1.4.15 Contractor Inspections

- G 1.4.15.1 The Contractor must afford the opportunity for the TA to conduct an inspection with the contractor on the condition and location of items to be removed prior to either carrying out the specified work or gaining access to a location to carry out the work.
- G 1.4.15.2 The Contractor must take a before picture of conditions prior to removing any items. These photos are to be in accordance with the Documentation section of the General note, named according to the specification section that resulted in removing those items.

G 1.4.15.3 Prior to the close out of any item under this specification, the Contractor must afford the TA the opportunity to verify the work has been completed in accordance with the specification. At that time the contractor must have available all photo's, documents, reports, and trials in relation to the item being closed out as completed.

G 1.4.16 Recording of Work in Progress

G 1.4.16.1 The TA may record any work in progress using various means including, but not limited to photography and video, digital or film.

G 1.4.17 Access for Maintenance, Installation, and Removal.

G 1.4.17.1 The layout of newly installed machinery and equipment must be designed and constructed to permit ready access for routine maintenance, operational checks and operational inspections without disturbance of other machinery, equipment or structure.

G 1.4.17.2 The Contractor must determine best routes for installing and removing equipment. All lifting points currently fitted on the ship must be treated as uncertified, and must be certified before use by the Contractor.

G 1.4.17.3 Any temporary lifting points installed by the contractor must be removed after work completion with welds ground flush, and paint coatings applied in accordance with the Interspec paint specification.

G 1.4.17.4 Manufacturer's recommended removal clearances must be allowed for.

G 1.4.17.5 After equipment installation and/or removal the Contractor must make good all equipment relocations, blemishes, and penetrations and must return the affected areas of the ship to the As-Delivered working condition.

G 1.4.18 Assembly of Components

G 1.4.18.1 The Contractor must ensure that during installation of specified equipment, that parts and assembled equipment are cleaned of smudges, spatter or excess solder, weld metal and metal chips or any other foreign material which might detract from the intended operation, function, or appearance of the equipment. (This would include any particles that could loosen or become dislodged during the normal expected life of the equipment). All corrosive material must be removed. This cleaning must take place before the parts are assembled into the equipment.

G 1.4.18.2 Covers, cowlings and components damaged by the Contractor must be replaced with a new CFM cover, cowling, or component.

G 1.4.18.3 Where torque specifications are not provided by the manufacturer, standard SAE nut and bolt torques must be used.

G 1.4.19 Protection of Equipment

G 1.4.19.1 The Contractor must take measures to ensure that surfaces and components of equipment installed on the vessel are protected against damage, soiling, and contamination as a result of contracted work.

G 1.4.19.2 All electrical and electronic equipment and components must be protected during the contract against physical damage, internal damage, and by the effects of adverse temperatures or other environmental conditions.

G 1.4.19.3 The Contractor must protect equipment that could be damaged as a result of movement of materials and equipment nearby. The Contractor must also protect equipment from nearby sources of contamination including but not limited to burning, welding, grinding and painting..

G 1.4.19.4 Any damage to surfaces, equipment, furnishings or decor incurred prior to acceptance must be returned to As Delivered condition by the Contractor.

G 1.4.19.5 All openings in machinery and/or systems prior to connections being made must be kept covered by suitable inserts or covers at all times.

G 1.4.19.6 The Contractor must obtain and follow instructions from its sub-Contractors for any special protection required for their equipment during the project work. Such instructions must be made available to the TA.

G 1.4.19.7 Physical protection including but not limited to plastic sheets, fireproof covers, heavy weight material covers, wood plugs, wood encasements and heaters must be used as required.

G 1.4.19.8 The Contractor must protect the vessel from the possibility of vermin infestation (insect/mammal/bird). If an infestation does occur during the contract period the Contractor must bear all costs to ensure the vessel is made vermin free before the vessel's departure and contract completion.

G 1.5 Documentation

G 1.5.1 Documentation is identified as a deliverable in the specification items requesting them.

G 1.5.2 Data Book

- G 1.5.2.1 The Contractor must provide all documentation generated as a result of specified deliverables in both electronic and paper formats. There must be 2 paper copies of each document, in two separate binders, as part of the contractors QA program. An electronic copy of all documentation must also be provided to the TA in accordance with the formats described in this specification item.
- G 1.5.2.2 All copies of documents generated as a result of specified deliverables will be referred to as the "Data Book".
- G 1.5.2.3 The Contractor must provide to the TA all the files generated as part of the Data Book must be received prior to the contract being considered complete. The files must be in hard format (CD-ROM, DVD-ROM, Flash Drive / Memory Stick). Each specification item is to have its own folder named according to the specification item. For example "G1.0 General Notes".
- G 1.5.2.4 Any documentation, media, and reports, that are the result of Additional Work, are also to be included as part of the Data Book.

G 1.5.3 File Naming

- G 1.5.3.1 File naming must be in the following format: *Specification#.# – Date (yyyy-mm-dd) – File Name Describing Information*. For Example: "G1.0 – 2013-12-01 – Details of file naming.pdf".

G 1.5.4 E-mails

- G 1.5.4.1 Any files sent to the CA/TA by e-mail must be named as per the "File Naming" section of this specification. All files that are e-mailed must have in the subject name: "Contract# - DATA BOOK – Date – Specification #". For Example: ***F1782-XXXXXX – DATA BOOK – 2014-11-30 – G1.0 General Notes***. Files sent by e-mail must also be included in the "Data Book".

G 1.5.5 File Formatting

- G 1.5.5.1 All documentation, reports, test results, certificates, or data obtained by the contractor in paper form must be scanned into unprotected (preferably searchable) Adobe PDF formatted files and named according to the File Naming section of this specification.
- G 1.5.5.2 All reports, test results, certificates, or raw data obtained by the contractor in electronic format must be converted to unprotected Adobe PDF formatted files and named according to the "File Naming" section of this specification. Both the original and the converted copy are to be provided as part of the Data Book.

G 1.5.6 Photos

- G 1.5.6.1 All photos obtained by the contractor as requested in the specification must be provided in .JPG formatted files at a resolution of at least 640 x 480 and named according to the "File Naming" section of this specification.

G 1.5.7 Measurements, Calibrations, and Readings.

- G 1.5.7.1 All measurements, calibrations and readings recorded, must be signed by the person taking the measurements, dated and scanned into electronic format as part of the Data Book.
- G 1.5.7.2 Recorded dimensions must be to a precision of three decimal places (unless otherwise stated) in the measuring system currently in use on the vessel.
- G 1.5.7.3 The Contractor must provide to the TA current and valid calibration certificates for all instrumentation used in the Test and Trials Plan showing that the instruments have been calibrated in accordance with the manufacturer's instructions. These copies are to be provided as part of the Data Book under any specification where measurements are required.

G 1.5.8 Test Inspection Records and Certificates

- G 1.5.8.1 Test Inspection Records and Certificates are identified as a deliverable in the individual specification item requesting them.
- G 1.5.8.2 Test Inspection Records and Certificates must be included as a separate section in the DATA BOOK and indexed/arranged in numeric order by specification number.
- G 1.5.8.3 The Contractor is responsible for maintaining a complete and accurate record of all tests and trials conducted on the vessel and on each piece of equipment. Prior to the commencement of a trial, all relevant documentation and associated test sheets, including shop test data, must be complete and attached to the trials agenda.
- G 1.5.8.4 All tests and trials data must be legible both in hard copy and electronic format. If necessary, handwritten records may require transcription into electronic format in order to be acceptable. The original must be signed by TCM, the TA, the Contractor and where necessary by the sub-Contractors and/or FSR's who witnessed the tests. All the Data must be submitted to the TA in accordance with the "Documentation" section of these General Notes.

G 1.6 Drawings

- G 1.6.1 This section, to be referred to as the Drawings section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be drawings.
- G 1.6.2 The contractor must have on staff or through a sub-contractor a person qualified and experienced in the use of AutoCAD who will create or modify drawings that result from the work.
- G 1.6.3 The Contractor must comply with the Canadian Coast Guard National CAD Standards titled "*Computer Aided Design (CAD) using AUTOCAD*" provided.
- G 1.6.4 Drawing disks must be clearly labeled with the Contract Number, file names and drawing numbers. If a complete listing exceeds the label size, a "readme.txt" file in ASCII format must be provided with each disk. A printed copy of the Readme file must accompany each disk. Disks must be labeled As-Fitted drawings for those drawings that have been approved and finalized.
- G 1.6.5 Final As-Fitted prints/plots must not contain markings or corrections by hand (i.e. marker, pen, pencil, etc.). Drawings containing mark-ups must be revised and re-printed/plotted.
- G 1.6.6 The Contractor must prepare all the working drawings necessary for the project requirements and modernization work.
- G 1.6.7 The Contractor must furnish all drawings required by sub-Contractors, trades and other consultants.
- G 1.6.8 Schematic drawings of systems must include all pertinent system information, including sizes, dimensions, labeling, equipment locations, and all information relating to system fittings.
- G 1.6.9 The Contractor must have in place a complete system of documenting and controlling all drawing revisions affected by the work of this project. Drawing numbering system and titles must match the original drawings for clarity and include a revision number with date.

G 1.6.10 Guidance Drawings

- G 1.6.10.1 All technical guidance drawings are issued to the Contractor for guidance purposes only. It is the responsibility of the Contractor to develop working drawings and to ensure that all such drawings receive applicable regulatory approval. The Contractor is to note that not all technical guidance drawings supplied are As-Fitted drawings. It is the responsibility of the Contractor to physically verify all affected items.

G 1.6.10.2 All departures from the provided guidance drawings and project specifications must be clearly indicated by the Contractor and written approval obtained from the TA before carrying out such alterations or departures.

G 1.6.10.3 Specification deviations must be documented using an Observation Report.

G 1.6.11As Fitted Drawings

G 1.6.11.1 The As-Fitted Drawings are identified as a deliverable in the specification item requesting them.

G 1.6.11.2 Upon completion of specified work, the Contractor must transfer the mark-ups from any working drawings where installation changes were made to drawings affected by the project work. These drawings become the As-Fitted drawings for the project work. The Contractor is responsible for providing updated vessel drawings affected by the project work to the TA prior to completion of the contract. The affected drawings must be submitted in the following formats:

- a) Five (5) plotted copies of the latest revision of each of the As-Fitted drawings;
- b) Two (2) electronic copies of the latest revision of each As-Fitted drawing.

G 1.6.11.3 Plotted drawings must be on standard ANSI paper sizes.

G 1.6.11.4 Marked up drawings are to be AutoCAD drawings where original AutoCAD drawings are provided. If no AutoCAD drawings were provided then scanned files (raster format) must be supplied to CCG in one of the following formats:

- a) DXF format;
- b) TIFF format;
- c) PDF format.

G 1.7 Manuals

G 1.7.1 This section, to be referred to as the Manuals section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be manuals.

G 1.7.2 General

G 1.7.2.1 Instruction Manuals must be individually bound in a hard cover 3 ring book format with a page size of 8 1/2" x 11". Drawings of a larger size must be

concertina folded to suit. The covers must have the following information printed thereon:

- a) CCGS Bartlett;
- b) Equipment Identification;
- c) Equipment Manufacturer;
- d) Date.

- G 1.7.2.2 Plastic tabbed indices must be provided for all sections of the manuals. Major equipment components must be subdivided into separate sections of the manuals.
- G 1.7.2.3 A master index must be provided at the beginning of each binder indicating all items included in each section.
- G 1.7.2.4 A list of names, addresses and telephone numbers of contacts associated with the equipment manufacturers must be provided that can be used after the project completion for maintenance and information data purposes.
- G 1.7.2.5 A copy of the final reviewed and approved As-Fitted drawing(s) must be provided within the maintenance manual.
- G 1.7.2.6 One (1) electronic copy of each manual must be provided in accordance with the Data Book section of this specification.
- G 1.7.2.7 Two (2) paper copies of manuals and data sheets must be supplied in English for all Contractor Furnished Equipment items.

G 1.7.3 Operation Manuals – As-Fitted

- G 1.7.3.1 Operation manuals must include the following items:
 - a) General description of equipment operating sequence;
 - b) Step by step procedure to follow in commissioning the equipment;
 - c) Schematic wiring diagram for the fitted equipment; and
 - d) All pertinent equipment performance criteria.
- G 1.7.3.2 Where software/hardware systems are fitted, the operation manual must include the full software documentation manual in paper form for the system and an

electronic copy in accordance with the Documentation Section. The minimum software documentation must include:

- a) System level diagrams describing the overall scheme of the software/hardware system;
- b) The functional specifications, which must describe in detail the functional capabilities of the system and each software components; and
- c) Project specific program listings including all comments describing the details of the code functions.

G 1.7.4 Maintenance Manuals – As-Fitted

G 1.7.4.1 Maintenance manuals are to include:

- a) Manufacturer's maintenance instructions for each item of the equipment requiring maintenance activity;
- b) Instructions are to include installation instructions, part numbers, part lists, master drawings and exploded views with part identification for all mechanical, electrical and electronic parts, name of suppliers;
- c) Summary list of each item of the equipment requiring lubrication, indicating the name of the equipment item, location of all points of lubrication, type of lubricant recommended, and frequency of lubrication; and
- d) Troubleshooting sections must be included for all equipment in the maintenance manual under a separate heading.

G 1.8 Identification

G 1.8.1 Nameplates

- G 1.8.1.1 Nameplates are identified as a deliverable in the individual specification item requesting them.
- G 1.8.1.2 All nameplates must be in English, except where required in English and French by TCM for reasons of emergency operation.
- G 1.8.1.3 Lettering must be clear and concise with the minimum use of abbreviations. Primary information must be given in larger size lettering than secondary information.
- G 1.8.1.4 The type of nameplates must suit the location in the vessel as specified below:

G 1.8.1.5 Plastic:

- a) Laminated plastic nameplates, black with white core engraved through to the center core, must be provided for all devices located on the exterior surfaces of switchboards, MCC's, or local control panels. Nameplates must be secured to the equipment with machine screws.
- b) New nameplates to be fitted on the existing equipment must be consistent in size and lettering with those already fitted or those being replaced.
- c) Nameplates indicating feeder circuits must identify each circuit by name and number and the fuse size or trip element rating.
- d) The Following Labels must be of laminated plastic, red with white core engraved through to the center core:
 - i) Safe Working Loads,
 - ii) Warning/Caution labels,
 - iii) Circuit Breakers with shunt trips requiring completion of remote circuits prior to being operated,
 - iv) Equipment with multiple power sources,
 - v) Circuit breaks having a potential power source connected to both sides
 - vi) Indication of any other potentially hazardous condition.

G 1.8.1.6 Engraved on Metal:

- a) Must be used in machinery spaces and where exposed to the weather or susceptible to covering by paint, oil or grease. Nameplates exposed to weather must be stainless steel or brass. Engraved metal nameplates must be of stainless steel or brass with lettering accentuated by means of black wax unless otherwise noted, and secured with stainless steel or brass machine screws.
- b) A complete list of nameplates, detailing size of plate, size of lettering and inscription must be submitted to the TA for review prior to ordering and/or manufacturing.

G 1.8.2 Wire Labelling

- G 1.8.2.1 Wire Labelling is identified as a deliverable in the individual specification item requesting them.

- G 1.8.2.2 All permanently installed cables must be tagged with the circuit designation at all points of connection and on both sides of bulkheads, decks, etc. Tags must be of metal compatible with the armor or cable sheathing. Both ends of the tags must be strapped to the cable with compatible metal strap after all painting has been completed. Straps must pass through holes in the tags so that tags are positively secured. Strap ends must be permanently folded and crimped. Adhesives of any kind will not be acceptable.
- G 1.8.2.3 All wiring in panels specified to be labelled must be labeled with the Cable Number and their conductor # unless otherwise specified in equipment installation drawings.

S1.0 SERVICES

S 1.1 GENERAL

- S 1.1.1 The Contractor must supply the following services to the vessel for the entire work period and disconnect upon completion of the work period.
- S 1.1.2 All staging, crantage, screens, lighting, and any other support service, equipment, and material necessary to carry out the work identified in these specifications must be Contractor supplied unless specifically noted otherwise.

S 1.2 WORKSITE INSPECTIONS

- S 1.2.1 During the work period, the Contractor must maintain their work areas in the vessel in a clean condition, free from debris and remove garbage daily.
- S 1.2.2 Upon completion of the contract, the Contractor must return the vessel to the As-Delivered state of cleanliness.
- S 1.2.3 Prior to the completion of the Acceptance Document, the Contractor's QA Representative, and the TA must perform an inspection of the vessel to view all areas where work was performed by the Contractor.
- S 1.2.4 Copies of all photos, documentation, and inspection sign off sheets must be provided in accordance with the Documentation section of the General Notes.

10.0 SAFETY AND SECURITY

10.1 ANNUAL LIFE RAFT SERVICE

10.1.A Identification

A.1 The contractor must remove the life rafts from the vessel and send to Survitec DBC Marine Safety systems for recertification.

10.1.B References

B.1 Equipment Data

Location	Mfg. Date	Type	Serial No.	Class of Emerg Pack	Persons	Next	Hydrostatic Release Expiry
						Annual	
Port Boat Deck	02/2010	RFD SURVIVA MK 4	5.14171E+1 2	A	20	06/2017	06/2018
Port Boat Deck	02/2010	RFD SURVIVA MK 4	5.14171E+1 2	A	20	06/2017	06/2018
Port Boat Deck	02/2010	RFD SURVIVA MK 4	5.14171E+1 2	A	20	06/2017	06/2018
Stbd Bridge Deck	02/2010	RFD SURVIVA MK 4	5.14171E+1 2	A	20	06/2017	06/2018
Stbd Bridge Deck	02/2010	RFD SURVIVA MK 4	5.14171E+1 2	A	20	06/2017	06/2018
Stbd Bridge Deck	02/2010	RFD SURVIVA MK 4	5.14171E+1 2	A	20	06/2017	06/2018
Boat Deck Aft SAR	11/1995	DBC	2948-6RBR	B	6	06/2017	(No Hydrostatic Release)

B.2 Drawings – Not Used

B.3 Regulations and Standards

B.3.1 Canada Shipping Act 2001

B.3.2 Canadian Life Saving Appliance Standard - TP 14475 E

B.3.3 IMO Resolution A.761(18)

B.3.4 Requirements from Manufacturer

10.1.C Statement of Work

C.1 The contractor must collect the life rafts from jetty at the vessel and ship to Survitec DBC at the first opportunity in order to insure no delay in the liferafts return to the vessel.

C.1.1 DBC Marine Safety Systems Ltd.

1689 Cliveden Avenue

Delta, BC, V3M 6V5, Canada

Ph: 1-604-278-3221

Fax: 1-604-278-7812

Toll Free: 1-800-931-3221 (In North America)

C.2 The liferafts must be re-certified by Survitec DBC

C.3 Any deficiencies with the liferafts will be actioned by PWGSC 1379.

C.4 Life rafts must be returned recertified to the vessel by June 14th, 2017. The liferafts will be re-installed by the ship's crew.

10.1.D Proof of performance

D.1 Inspection Points – Not Used

D.2 Testing/Trials – Not Used

D.3 Certification

D.3.1 The liferafts must all be recertified in accordance with Canadian Life Saving Appliance Standard - TP 14475 E

D.3.2 The liferafts must meet all manufacturers recommendations for annual maintenance

D.4 Documentation

D.4.1 The contractor must provide an original copy of the certificates for each life raft.

D.4.2 Certificates must be addressed to the Canadian Coast Guard, CCGS Bartlett and not to the Contractor.

D.5 Training – Not Used

No information has been removed or severed from this page

11.0 HULL AND RELATED STRUCTURES

11.1 PORT STORES STEEL REPAIRS/VENT INSTALL [TCMS INSPECTION]

11.1.A Identification

- A.1 The contractor must make steel repairs to the port bulkhead of port stores.
- A.2 The contractor must install a vent for port stores [TCMS Inspection]

11.1.B References

B.1 Equipment Data

- B.1.1 Not used.

B.2 Drawings

- B.2.1 B10-77-3 General Arrangement

B.3 Regulations and Standards

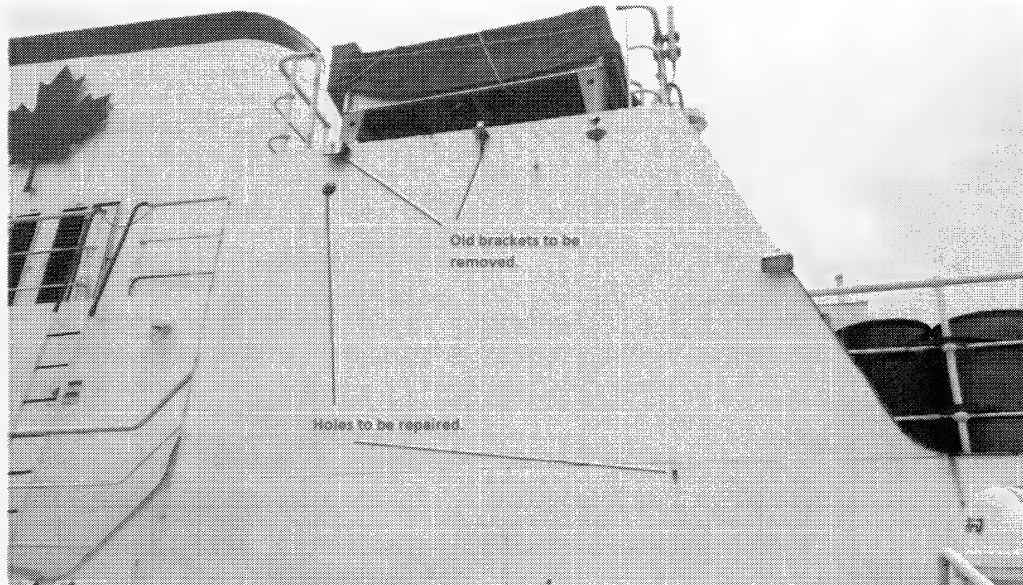
- B.3.1 The following Standards and Regulations apply to work carried out in this section;
The Contractor must ensure all work completed in this section meets these
Standards and Regulations as well as any other pertinent Federal/Territorial
Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
	Guide to Structural Fire Protection, TP 11469 E	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

11.1.C Statement of Work

- C.1 The Contractor must remove the storage cabinets in way of the repairs to facilitate access. The contractor must replace the storage cabinet once repairs are finished.

- C.2 The contractor must strip back insulation in way of the repairs in order to facilitate safe hotwork access. Following repairs the contractor must replace the insulation as it was originally found.
- C.3 The contractor must crop and weld two 12" diameter insert plates in way of the identified holes. Plate thickness is 1/4".



- C.4
- C.5 The contractor must install a vent for the port stores space using a gooseneck in the deck above the space. The vent must be fitted with a method of being isolated.
- C.6 The vent must be constructed of 8" Sch 40 pipe. Mushroom head vent complete with internal fire damper (CO2 locker vent heads to be used as a sample). Method of securing the damper in the open and closed position. Two options: reuse old directional antenna base (blanking flange installed covering hole in deck) or crop base and install new vent place. See picture:



C.7

C.8 Port Stores outboard bulkhead. Two old brackets to be cropped and ground flush.

C.9 Removed/disturbed insulation and cladding to be replaced with new. Currently fitted 2" of 2.5lb BX-Spintex insulation (mineral wool) and 16 gauge steel expanded metal cladding. Secured with 10 gauge pins, clips and aluminium covers.

C.10 Disturbed coatings to be repaired: (interior requires Intershield 300 HS only)

C.11 2 coats Intershield 300 HS

C.12 1 coat Intergard 263

C.13 2 coats Interlac 665 White

11.1.D Proof of Performance

D.1 Inspection Points

D.1.1 The TA must inspect the bulkheads after any hotwork prior to installation of insulation.

D.1.2 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds for the vent piping only

D.1.3 Welding must be in accordance with the General Notes and welds must be NDT inspected by an independent welding inspection company.

D.1.4 The TA must inspect the final installation.

D.2 Testing/Trials

D.2.1 Not used.

D.3 Certification

D.3.1 The insulation must be certified as suitable for the application.

D.4 Documentation

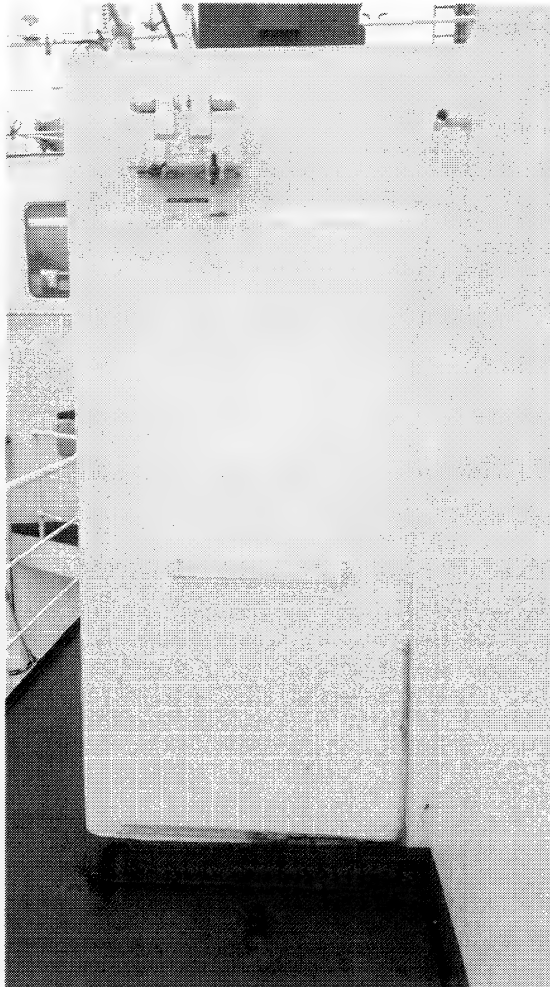
D.4.1 The contractor must provide copies of the TCMS or Classification society approval certification for the material used.

D.5 Training – Not Used

11.2 BLANKED OFF DOOR REPAIRS [POSSIBLE ASBESTOS]

11.2.A Identification

- A.1 The contractor must make repairs to the former access door to the Navigation Bridge Deck



A.2

11.2.B References

B.1 Equipment Data

- B.1.1 Nav bridge deck door/library area has two longitudinal Marinite asbestos bulkheads. The aft bulkhead is obscured by shelving/cabinets. The deck has vinyl tiles known to have 2% Chrysotile asbestos content. Insulation behind the panels is 2" 2.5lb BX spintex mineral wool.

B.2 Drawings

- B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
B10-77-3	General arrangement
388-43-1	Insulation
1086A	Construction Section of Twin Screw Inshore Supply & Buoy Vessel for the Department of Transport

B.3 Regulations and Standards

- B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
	Guide to Structural Fire Protection, TP 11469 E	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

11.2.C Statement of Work

- C.1 The contractor must clear remove all cabinetry, bulkhead panels and insulation from the spaces adjacent the repairs (ships library). All cabinetry, bulkhead panels and insulation must be replaced as found following repairs.
- C.2 The contractor must crop out and dispose of the former door frame from the bulkhead.
- C.3 The contractor must weld in insert plates in place of the door frame. Insert plates to be ¼" thickness.
- C.4 The contractor must touch up areas of disturbed paint in accordance with the vessels existing paint scheme.

C.5 The contractor is to apply Two coats Intershield 300 HS, Tie-coat of Intergard 263 and top-coat with two coats of Interlac 665 White. For the outside. Inside the two coats of Intershield 300HS is sufficient.

C.6 Any asbestos remediation work will be actioned by PWGSC 1379

11.2.D Proof of Performance

D.1 Inspection Points

- D.1.1 The TA must inspect the bulkhead after any hotwork prior to installation of insulation.
- D.1.2 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds.
- D.1.3 Welding must be in accordance with the General Notes and welds must be NDT inspected by an independent welding inspection company.
- D.1.4 The TA must inspect the final installation.

D.2 Testing/Trials

- D.2.1 Not used.

D.3 Certification

- D.3.1 The insulation must be certified as suitable for the application.

D.4 Documentation

- D.4.1 The contractor must provide copies of the TCMS or Classification society approval certification for the material used.
- D.4.2 The contractor must provide copies of the weld procedure for new inserts.

D.5 Training – Not Used

11.3 CHAIN LOCKER AND BOWTHRUSTER VOID SOUNDING TUBE SOCKET REPLACEMENT

11.3.A Identification

- A.1 The contractor must crop out and replace the existing sounding tube sockets.

11.3.B References

B.1 Equipment Data – Not Used

B.2 Drawings

- B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
B10-77-3	General arrangement

B.3 Regulations and Standards

- B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
	Guide to Structural Fire Protection, TP 11469 E	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

11.3.C Statement of Work

- C.1 The contractor must gas free and make safe for entry and hotwork the chain locker and bowthruster void spaces.
- C.2 The contractor must crop out and replace the existing sounding tube sockets for the chain locker and the bowthruster void space.
- C.3 The replacement sounding tube sockets will be GSM Wager stainless sockets with brass plugs.
- C.4 The connection method to the existing sounding tube sockets must be Victaulic type with either Lloyds or ABS approval.

11.3.D Proof of Performance

D.1 Inspection Points

- D.1.1 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds.
- D.1.2 Welding must be in accordance with the General Notes and welds must be dye penetrant tested and witness by the TA or delegate.
- D.1.3 The TA must inspect the final installation.

D.2 Testing/Trials

- D.2.1 Not used.

D.3 Certification

- D.3.1 Not used

D.4 Documentation

- D.4.1 Not used

D.5 Training – Not Used

11.4 TANK CATCH-ALL DRAINS BUNG CROP AND REPLACE

11.4.A Identification

- A.1 The contractor must crop out and replace 4 drain bungs from the catch-alls identified herein.

11.4.B References

B.1 Equipment Data

- B.1.1 #1 Port double bottom catch-all
- B.1.2 #1 Starboard double bottom catch-all
- B.1.3 Aft well deck port fueling station catch-all
- B.1.4 Aft well deck starboard fueling station catch-all

B.2 Drawings

- B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
B10-77-3	General arrangement

B.3 Regulations and Standards

- B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
	Guide to Structural Fire Protection, TP 11469 E	No

Standards		
Regulations		
	Canada Shipping Act 2001	No

11.4.C Statement of Work

- C.1 The contractor must crop out and replace the drain bungs from the catch all identified. The catch all couplings are 1.5" NPT. The contractor must replace with new CFM stainless steel bungs.
- C.2 The contractor must touch up paint as per the vessels existing paint scheme.

11.4.D Proof of Performance

D.1 Inspection Points

- D.1.1 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds.
- D.1.2 Welding must be in accordance with the General Notes and welds must be dye penetrant tested and witnessed by the TA or delegate.
- D.1.3 The TA must inspect the final installation.

D.2 Testing/Trials

- D.2.1 Not used.

D.3 Certification

- D.3.1 Not used

D.4 Documentation

- D.4.1 Not used

D.5 Training – Not Used

12.0 PROPULSION AND MANEUVERING

12.1 STARBOARD MAIN ENGINE TURBOCHARGER MOUNTING BRACKET REPLACEMENT

12.1.A Identification

- A.1 The contractor must remove and replace the starboard main engine turbocharger bracket with a new CFM bracket.

12.1.B References

B.1 Equipment Data

- B.1.1 Not Used

B.2 Drawings

- B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
n/a	

B.3 Regulations and Standards

- B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No

Publications		
	Guide to Structural Fire Protection, TP 11469 E	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

12.1.C Statement of Work

- C.1 Coast Guard will drain and refill the jacket water from the engine.
- C.2 The contractor must remove:
 - C.2.1 Two inlet exhaust manifold bellows
 - C.2.2 One outlet exhaust bellows.
 - C.2.3 Two jacket water connections
 - C.2.4 Compressor outlet to intake manifold elbow/coupling
 - C.2.5 Turbocharger assembly using GSM lifting bracket. Turbocharger must be suitably supported and landed in a suitable location identified by the TA.
 - C.2.6 Cast Iron turbocharger bracket
- C.3 The contractor must transport the cast iron turbocharger bracket to United Engineering so that the old bracket can be used as a template to fabricate new out of mild steel. United Engineering fabricated a new bracket for the port main engine in the past.

United Engineering

2066 Henry Avenue West in Sidney, BC

Or:

327G Harbour Road in Victoria, B.C.

Contact: John Van Munster (250) 940-0984
- C.4 The contractor must transport the new bracket back to the vessel and re-install on the starboard main engine.

- C.5 Exhaust system and turbocharger must be re-assembled how it was found. Gaskets for re-installation will be GSM.

12.1.D Proof of Performance

D.1 Inspection Points

- D.1.1 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to survey the new bracket prior to installation

D.2 Testing/Trials – Not Used

D.3 Certification – Not Used

- D.3.1 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds.

- D.3.2 Welding must be in accordance with the General Notes and welds must be NDT inspected as per United Engineering Quality Control System.

- D.3.3 The TA must inspect the final installation.

D.4 Documentation – Not Used

D.5 Training – Not Used

13.0 POWER GENERATION SYSTEMS

13.1 SHIP SERVICE GENERATORS ANNUAL INSPECTION

13.1.A Identification

- A.1 The contractor must sub-contract, to Finning Ltd., to complete an annual engine service, and generator service on all 3 ship service generators. Contact: Matt Clare, Finning Nanaimo, tel 250 753 2441, cel 250 713 4289.
- A.2 Vibration testing on the three generators must be completed at the start of the work to determine if bearing replacement is required. Any bearing replacement will be by the work arising process (1379 action). Finning must sub-contract the vibration testing to Emery Electric.

A.1 Equipment Data

- A.1.1 No. 2 SSG
Genset Package No. SJB00929
Engine Serial No. C9Z00220
- A.1.2 No. 1 SSG
Genset Package No. SJB00928
Engine Serial No. C9Z00219
- A.1.3 No. 3 SSG
Genset Package No. SJB00931
Engine Serial No. C9Z00223
- A.1.4 Both Generators:
No. 2 Generator Serial No. 244377 / 3
No. 1 Generator Serial No. 244377 / 4
No. 3 Generator Serial No. 244377 / 2
Leroy Somer
LSA M46.219C6/4
60 Hz, 1800 RPM, Protection 1P23
P.F. 0.8
Th Class H

A.V.R. R448 ARED

NDE bearing 6315 2RS

Weight 775 Kg

Voltage 480, Phase 3, Cont. 312 KVA, Base 250 kW, 50 °C 375A.

A.2 Drawings

- A.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE	Number of Sheets

A.3 Regulations and Standards

- A.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards	TP 127 "Ships Electrical Standards	No
	IEEE Standard 45-2002 entitled "Recommended Practice for Electric Installations on Shipboard 2002	No
	CGTS-3 entitled "General Specifications for the Installation of Shipboard Electronic Equipment".	
Regulations	Canada Shipping Act 2001	No
	Marine Machinery regulations (SOR/90-264)	No

13.1.B Statement of Work

- B.1 Vibration testing must be completed on all three generators before any disassembly, to determine if generator bearing replacement is required.

- B.2 Prior to disassembly Finning must complete a performance test on all three genset engines using Cat ET.
- B.3 On all genset engines the crankcase breather must be cleaned.
- B.4 On all genset engines the after cooler must be cleaned and tested. Any replacement will be by 1379 action.
- B.5 On all genset engines the heat exchanger (JW cooler) must be cleaned and pressure tested.
- B.6 On all genset engines the HEUI pump magnetic cover plate must be inspected for any signs of metal. (Note: each HEUI pump, with integral fuel transfer pump, was replaced in 2012.)
- B.7 On all genset engines a coolant sample must be tested to determine ELC condition. If required coolant will be changed using GSM coolant.
- B.8 On all genset engines, the thermostats must be replaced with new GSM thermostats.
- B.9 Upon reassembly of cooling system. Pressure test of cooling system must be performed according to the Cat Service Manual.
- B.10 On all genset engines, the valve clearances must be checked and adjusted.
- B.11 On #2 SSGs the cam follower spring retaining clips must be replaced by the contractor with updated part (cylinder head removal required on SSG#2). Replacement gaskets to be CFM (Finning)
- B.12 Engines must be re-assembled per manufacturer's recommendations and subjected to an operational check.

13.1.C Proof of Performance

C.1 Inspection Points

- C.1.1 All disassembled components must be made available for inspection by the TI/TA.

C.2 Testing/Trials

- C.2.1 Finning must complete a performance test on both engines using Cat ET.
- C.2.2 Finning must use Emery Electric to conduct vibration testing on 3 generators. Any required generator bearing replacement will be by 1379 action

C.3 Certification – Not Used

C.3.1 Certificates in accordance with the Documentation section of the General Notes.

C.4 Documentation

C.4.1 The contractor must supply a report from Finning documenting the work completed.

C.5 Training – Not Used

14.0 POWER DISTRIBUTION SYSTEMS

14.1 ANNUAL MEGGER SURVEY

14.1.A Identification

- A.1 The contractor must perform the annual megger survey on the vessel using the template attached as Annex A Annual meggar survey template.

14.1.B References

B.1 Equipment Data

- B.1.1 Annex An Annual Megger Survey Template

B.2 Drawings – Not Used

B.3 Regulations and Standards

- B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
TP 127	Ships Electrical Standards	No
IEEE 45	Recommended practice for Electrical Installations on Shipboard	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

14.1.C Statement of Work

- C.1 The contractor must conduct the annual megger survey on the vessel using the attached template
- C.2 Any deficiencies found during the survey will be actioned by PWGSC 1379.

14.1.D Proof of Performance

D.1 Inspection Points

- D.1.1 The contractor is to allow the TA to inspect any deficiencies found.

D.2 Testing/Trials – Not Used

D.3 Certification

- D.3.1 Not used.

D.4 Documentation

- D.4.1 The contractor must include a report (completed version of Annex A) which includes results after any repairs have been actioned.

D.5 Training – Not Used

14.2 SHIP SERVICE GENERATOR AND SHORE POWER BREAKER 5 YEAR SURVEY

14.2.A Identification

- A.1 The contractor must perform the 5 year survey on the 3 ship service generator breakers, emergency generator and one shore power breaker.
- A.2 The contractor must stagger the breaker service so that the ship is able to maintain electrical power.

14.2.B References

B.1 Equipment Data

<u>Breaker Designation</u>	<u>Serial #</u>	<u>Trip Unit Serial #</u>	<u>Long-term Pickup/Delay</u>	<u>Short-term Pickup/Delay</u>	<u>Instantaneous Pickup</u>
#1SSG	20200657322	01922086	400A /4sec	800A/0.3sec	6400A
#2SGG	20200657323	01922135	400A /4sec	800A/0.3sec	6400A
#3SSG	20200657324	01922125	400A /4sec	800A/0.3sec	6400A
ShorePower	20200657325	01922058	320A/4Sec	1280/0.3Sec	6400A
E-gen	85198186801	01206474	400/1sec	800/0.3Sec	4800A

Common Information for All 5 Breakers

<u>MFG</u>	<u>Family</u>	<u>Breaker Type</u>	<u>Trip Unit Family</u>	<u>Trip Unit Type</u>	<u>Sensor Rating</u>
Schneider	MasterPact	NW08	Micrologic	5.0A	800A

B.2

B.3 Drawings – Not Used

B.4 Regulations and Standards

- B.4.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

<u>FSSM Procedures</u>	<u>Title</u>	<u>Included Yes/No</u>
-------------------------------	---------------------	-------------------------------

Publications		
TP 127	Ships Electrical Standards	No
IEEE 45	Recommended practice for Electrical Installations on Shipboard	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

14.2.C Statement of Work

- C.1 The contractor must perform 5 year maintenance on the breakers identified including primary injection testing, contact resistance, trip functionality, accuracy.
- C.2 The TA and TCMS inspector must be given the opportunity to witness testing and view disassembled breakers. Minimum 72 hours' notice must be given by the contractor to co-ordinate inspection.
- C.3 Any deficiencies found during the survey will be actioned by PWGSC 1379.

14.2.D Proof of Performance

D.1 Inspection Points

- D.1.1 The contractor is to allow the TA to inspect any deficiencies found.

D.2 Testing/Trials – Not Used

D.3 Certification

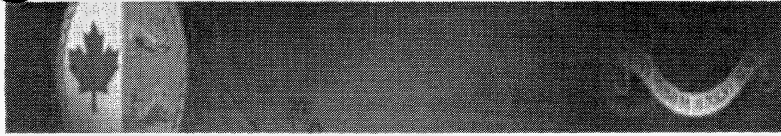
- D.3.1 Not used.

D.4 Documentation

- D.4.1 The contractor must include a report of all findings and test results to the TA for submission to TCMS.

D.5 Training – Not Used

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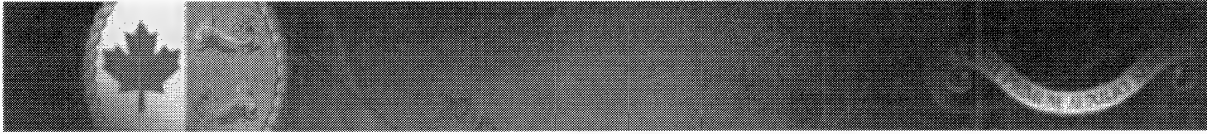
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July 2017
Project# 32927

Prepared for: Canadian Coast Guard



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CCGS Bartlett
Insulation Report
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Asbestos Condition Report

General Notes

The following is the latest Asbestos Condition Report for this vessel.

North West Environmental Group Ltd. (NWest) Technologist [REDACTED] conducted an asbestos assessment survey of the Canadian Coast Guard Ship (CCGS) Bartlett on May 27, 2016... This report is not intended for use as a scope of work for removal or as a specification section for inclusion in Tender Documents. Material identification noted herein is based on:

- Visual assessment of the ship.
- On-site labeling.
- Previous testing and assessments by NWest.
- Previous testing and assessments by others.

Partial History of CCGS Bartlett and Asbestos Abatement

2009-2010

The CCGS Bartlett underwent a Vessel Life Extension (Phase I and II) at Allied Shipyards between June 2009 and 2010.

According to abatement documentation prepared by Allied Shipbuilders Ltd. (ASL) and made available by the Canadian Coast Guard (CCG), asbestos abatement during this Vessel Life Extension (VLE) included:

- Removal of all deckhead support structure.
- Removal of asbestos containing insulation on steam and domestic lines.
- Removal of asbestos containing mastic at all windows.
- Removal of asbestos containing paneling in the way of drop windows.
- Removal of floor covering in the Galley, Mess and Lounge.
- Removal of deck steel plate from outboard bulk head to approximately 6' to 8' inboard in various Upper Deck compartments, the Poop Deck, and the Wheelhouse Top.
- Floor tiles in alleyway to Radio Room and Bridge and N-03 (Radio Room).

NWest was unable to verify the extent of the deck plate removal during the post VLE survey as all finishings were re-fitted or covered before NWest's assessment. NWest did not oversee this work and cannot verify effectiveness of abatement efforts.

2017

As per a risk assessment conducted by Arec Environmental Group (Arec) and a work procedure written by Hazpro Environmental (Hazpro), removal of asbestos-containing polymer bulkhead panels in the ship's Library was undertaken. Other ACM remains, including deck tiles, deck screed, and adjacent ACM bulkhead panels.

NWest did not oversee this work and cannot verify effectiveness of abatement efforts.

Previous Data Included in this Report

NWest has incorporated the following bulk sample results from previous assessments into this report. NWest's analytical results are appended to this report (Appendix B) and documentation by others can be obtained from the CCG.

- NWest project 16579, January 2012
- NWest project 17679, June 2012
- NWest project 25017, April 2015
- NWest project 25366, June 2015

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- NWest project 25637, June 2015
- NWest project 28534, February 2016
- NWest project 29600, May 2016
- NWest project 32927, June 2017
- Allied Shipbuilders Ltd. Asbestos Management Plan, September 2010
 - Pacific Environmental Consultants (PEC), Bulk Sample Reports, 2010
- Author not specified, 2.11B – Steel Repairs – decks Rev 0 (PDF entitled *Deck Renewals*)
- Arec Environmental (Arec), Limited Hazmat Survey for Library, May 2017
- Hazpro Environmental, Work Procedures for Library Bulkhead Panels, May 2017
- Pinchin Harris Holland Associates Ltd (PHH), Bulk Sample Analysis Results for Project 4595; Canadian Coast Guard Bartlett, undated
- United Engineering, CCGS Bartlett Anchor Windlass Inspection Report, June 15, 2015

NWest did not oversee bulk sample collection that may have been conducted by other consulting firms and cannot verify that all samples were collected in accordance with WorkSafeBC requirements (e.g. that samples were cut down to base substrate in all cases).

Note 1: WorkSafeBC reduced the maximum allowable concentration of asbestos in non-vermiculite bulk materials from 1% to 0.5% in 2012. Any negative results (i.e. no asbestos detected or results less than 1% asbestos) prior to this change are subject to additional testing using current allowable concentrations. Negative results should be disregarded until further testing confirms the asbestos status of the material.

Suspect Asbestos Containing Materials on This Vessel

Because the CCG continues with its asbestos removal and abatement program, there may have been some changes made after this report was printed.

In any case of uncertainty, all material must be considered 'asbestos containing' until it has been properly identified.

Since asbestos has been found historically in a variety of common insulating materials aboard this and similar vessels, the following materials should be considered asbestos-containing unless otherwise stated. Note that this list is neither exhaustive nor all-inclusive:

- Gaskets on flanges, valves, fire doors, and equipment.
- Insulation inside and around fire doors.
- Inside capstan and transformer insulators.
- Textured and anti-sweat coatings on ventilation trunking, bulkheads, deckheads, stiffeners, and around portholes and windows found throughout the ship.
- Older style round lighting fixtures.
- All concealed pipe insulation, textile wrap and fittings above suspended T-bar and deckhead tiles.
- Insulating wraps and insulation remnants under newer non-asbestos containing pipe insulation.
- Cement board and fibreboard spacers and shims concealed behind suspended deckhead tiles and bulkhead paneling, including behind original plywood marine panels.
- Exterior and interior deck screed (any cement-like deck material or anti-skid coating). Asbestos-containing remnants may be present under newer layers.
- Sheet and tile flooring products concealed beneath carpeting or other flooring layers.

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- Coatings and insulation remnants, including mastics, found behind non-asbestos-containing insulation such as mineral fibre.
- Marinite panels behind new metal cladding panels and/or debris within bulkhead cavities.
- Electrical conduit and wire insulation.
- Penetration insulation/packing/caulking (in particular, older concealed layers)
- Inside and/or between fixed equipment.
- Dust and/or debris adjacent to damaged asbestos-containing materials.
- Valve, flange and equipment gaskets.
- Mechanical vibration dampeners.

An asbestos risk assessment by a qualified person as defined by Labour Canada and WorkSafeBC must be completed prior to any removal and/or alteration work aboard the vessel. Removal and/or alteration work requires control measures to be implemented in accordance with Labour Canada, WorkSafeBC regulations, and Canadian Coast Guard site-specific requirements. Protective personal equipment is required during any work or alteration that may disturb synthetic or asbestos insulation and/or dust that may be present. Hazardous materials other than those known or suspected to contain asbestos are not included herein.

The following table summarises the observed and/or tested suspect materials on this vessel. Non-homogeneous materials as noted in the table below, such as anti-sweat paint and deck screed, were sampled at damaged locations only. Additional representative sampling of non-homogeneous materials is required in order to confirm the asbestos status of these materials.

Note 2: Other hazardous materials including, but not limited to, lead, crystalline silica, and vitreous fibres may be present and have not been included in this report. These and other hazardous materials must be assessed and removed in accordance with Labour Canada, WorkSafeBC regulations, and Canadian Coast Guard-specific requirements.

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The following table summarises suspect and confirmed asbestos containing materials identified on the CCGS Bartlett.

Table 1: Asbestos Risk Assessment – Asbestos Containing Materials (Suspect and Confirmed)
See Appendix A for description of assessment criteria

Suspect Asbestos Containing Materials						
Deck	Compartment	Material	Condition	Friability	Accessibility	Recommendations/Comments
All	Throughout. May be present beneath newer non-ACM layers.	Penetration caulking (various colours)	Good	Non-friable	Access (A) – Accessible to all vessel users Access (C) Concealed – Areas of the building which require removal of a building component	This is a non-homogenous material. Treat as asbestos containing unless additional testing is conducted prior to disturbance to confirm asbestos status. Action 7 – Monitor in place with routine surveillance.
All	Throughout (generally present in mechanical and electrical spaces and on electrical components on the outer decks)	Water sealant (various colours)	Good	Non-friable	Access (A) – Accessible to all vessel users	This is a non-homogenous material. Treat as asbestos containing unless additional testing is conducted prior to disturbance to confirm asbestos status. Action 7 – Monitor in place with routine surveillance.
Deck 3	Exterior decks, various interior compartments	Anti-skid coating (original coatings beneath newer non-asbestos coatings)	Good-Fair	Non-friable	Access (A) – Accessible to all vessel users	This is a non-homogenous material. Treat as asbestos containing unless additional testing is conducted prior to disturbance to confirm asbestos status. Action 7 – Monitor in place with routine surveillance.
All	Throughout	Gaskets (various colours)	Good-Fair	Non-friable	Access (D) – Concealed, requiring demolition/dismantlement of finishing	This is a non-homogenous material. Treat as asbestos containing unless additional testing is conducted prior to disturbance to confirm asbestos status. Action 7 – Monitor in place with routine surveillance.

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Table 1: Asbestos Risk Assessment – Asbestos Containing Materials (Suspect and Confirmed)
See Appendix A for description of assessment criteria

Suspect Asbestos Containing Materials						
Deck	Compartment	Material	Condition	Friability	Accessibility	Recommendations/Comments
					materials or mechanical equipment	testing is conducted prior to disturbance to confirm asbestos status.
Deck 3	Emergency Generator Room (B15)	Asbestos liner or acoustic phone booth casing insulation	Unknown	Friable	Access (D) Concealed requiring demolition/dismantlement of finishing materials	Action 7 – Monitor in place with routine surveillance. Action 7 Monitor in place with routine surveillance.

Confirmed Asbestos Containing Materials						
Deck	Compartment	Material	Condition	Friability	Accessibility	Recommendations/Comments
All	Various	Floor tile	Good	Non-friable	Access (A) – Accessible to all vessel users	Action 7 Monitor in place with routine surveillance.
Deck 4 Deck 3 Deck 2 Deck 1	Throughout. Some localized removal was undertaken in various areas on the Upper Deck, Poop Deck, and Wheelhouse Top, however, there is no clear demarcation of new deck screed (non-suspect) and previously applied deck screed (suspect), therefore, all should be treated as ACM. See document <i>Deck</i>	Deck screed and amosite insulation /insulation block (brown fibres) concealed beneath the screed	Screed: Good-Fair Amosite: Debris (concealed)	Screed: Non-friable Amosite: Friable	Screed: Access (A) – Accessible to all vessel users Amosite: Access (D) Concealed requiring demolition/dismantlement of finishing materials	Screed: This is a non-homogenous material. Treat all damage as asbestos-containing unless additional testing is conducted prior to disturbance to confirm asbestos status. Action 7 Monitor in place with routine surveillance. Amosite: Action 7 Monitor in place with routine surveillance.

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Confirmed Asbestos Containing Materials						
Deck	Compartment	Material	Condition	Friability	Accessibility	Recommendations/Comments
	Renovals, for details.					
All	Throughout	Marine panels (Marinite-type)	Exposed: Good-Fair Concealed: Unknown	Non-friable	Exposed: Access (A) - Accessible to all vessel users Concealed: Access (C) Concealed - Areas of the building which require removal of a building component	Action 7 Monitor in place with routine surveillance.
All	Throughout	Red duct mastic	Concealed: Unknown	Non-friable	Access (C) Concealed - Areas of the building which require removal of a building component	Action 7 Monitor in place with routine surveillance.
All	Throughout	Pipe Insulation and/or remnants including cementitious elbows and fitting	Exposed: Good Concealed - Unknown	Friable	Exposed: Access (A) - Accessible to all vessel users Concealed: Access (C) Concealed - Areas of the building which require removal of a building component	Action 7 Monitor in place with routine surveillance.

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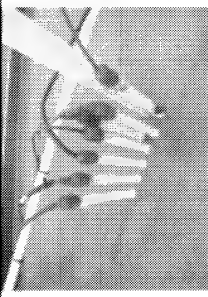
CCGS Bartlett
Asbestos Condition Report


1.0 Compartment by Compartment Assessment


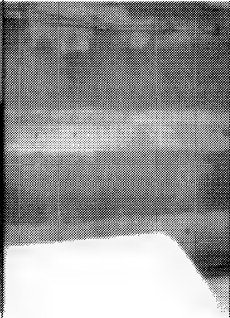


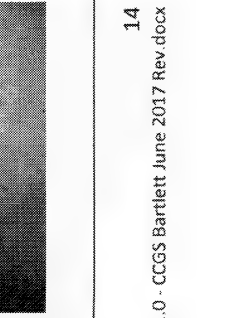

The following section details the observations and testing conducted on this vessel for asbestos-containing materials. See Appendix A for a description of the assessment criteria.

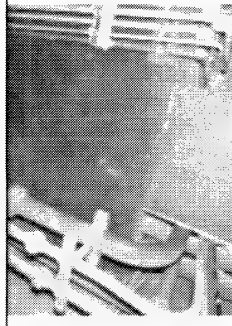
Material conditions may have changed since the site assessment. Hazardous materials other than asbestos may be present. A project-specific risk assessment meeting Labour Canada Regulations, WorkSafeBC Regulations, and Coast Guard-specific requirements must be completed prior to any alteration, renovation, or refit work.


The compartment-by-compartment sections are to be read in conjunction with the **General Notes**.

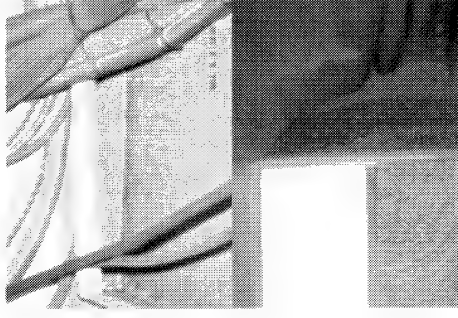
Deck 5 Wheelhouse Top								Wheelhouse Top	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	Not Applicable (N/A)	N/A	N/A	N/A	N/A	N/A	N/A		
Bulkhead	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Lagging	None observed	N/A	N/A	N/A	N/A	N/A	N/A		
Deck	Anti-skid coating	May contain asbestos in original coatings beneath newer non-asbestos coatings	Good	Non-friable	A	7			
Other	Water Sealant (brown) wrap with mastic.	May contain asbestos	Good	Non-friable	A	7			
Comments	N/A								

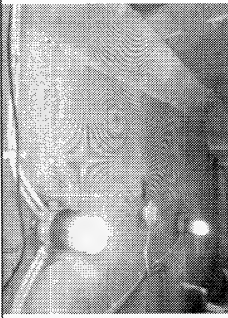

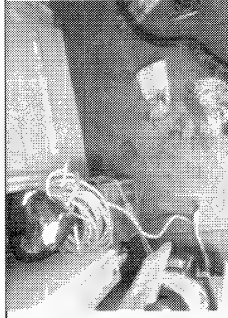
Deck 5 Wheelhouse Top							No. 2 A/C Plant	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Bulkhead	Styrofoam.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photo not available	
Lagging	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Cementitious elbows and fittings.	Pipe elbows and fittings contain asbestos based on sample results: <ul style="list-style-type: none">collected by PHH	N/A	Friable	A	7		
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photo not available	
Comments	N/A							


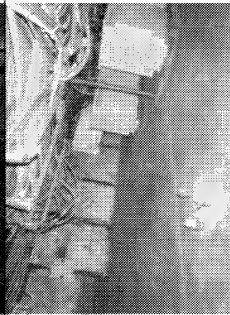

Deck 5 Wheelhouse Top							Funnel Casing	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	High temperature jacket.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Textile and plastic moulding over fibrous insulation (Navy board system).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Cementitious elbows and fittings.	Pipe elbows and fittings contain asbestos based on sample results:	Good	Non-friable	A	7		


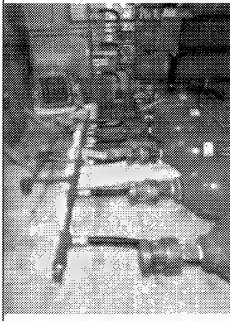

Deck 5 Wheelhouse Top							Funnel Casing	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deck	Checker plate metal catwalk.	<ul style="list-style-type: none">collected by PHH. No suspect asbestos.	N/A	N/A	N/A	N/A		
	Paint metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Comments	N/A							



Deck 4 Navigation Bridge Deck							Wheelhouse	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Port & Starboard: Wood panels.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.	

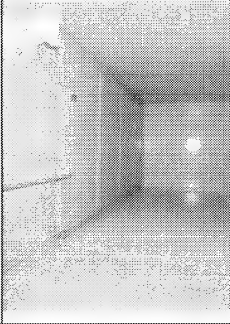
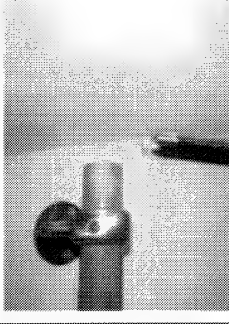

Deck 4 Navigation Bridge Deck							Wheelhouse
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Carpet	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Floor Tile	Floor tile contains asbestos based on sample results: <ul style="list-style-type: none">32927-1: Chief Engineer (B-6) (1% Chrysotile)	Good	Non-friable	A	7	
	Deck screed	Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWWest)collected by PEC	Unknown	Non-friable	D	7	
Comments	N/A						

Deck 4 Navigation Bridge Deck							E.R. Port Stores	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
						N/A		
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A	
						N/A		
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Comments	N/A							

Deck 4 Navigation Bridge Deck							Beneath Wheelhouse	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A		
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Comments	N/A							

Deck 4 Navigation Bridge Deck						CO2 Room (N07)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	High temperature jacket.	No suspect asbestos.	N/A	N/A	N/A	N/A	

Deck 4 Navigation Bridge Deck							CO2 Room (N07)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Other	Water sealant (beige).	May contain asbestos.	Good	Non-friable	A	7		
Comments	New door (non-asbestos; 2016)							


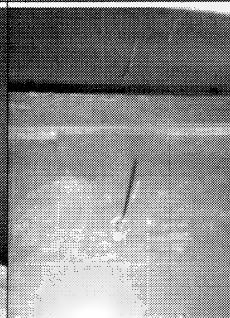

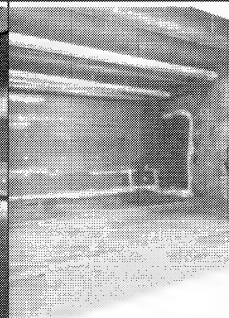
Deck 4 Navigation Bridge Deck						Stairway to Wheelhouse		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
		No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Not observed.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.	
Deck	Resilient sheet flooring over deck screed. Floor tiles may be present.	No suspect asbestos in sheet flooring Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWWest) • collected by PEC	N/A	N/A	N/A	N/A		
		Floor tiles, if present, presumed to contain asbestos based on	Unknown (concealed)	Non-friable	D	7		


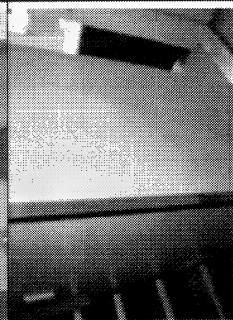
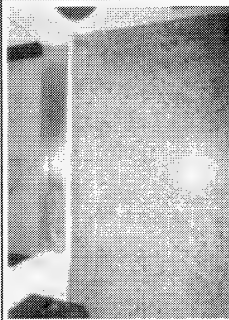
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Deck 4 Navigation Bridge Deck				Stairway to Wheelhouse			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC					
Comments	No information on the removal of the asbestos containing floor tiles during the 2009-10 VLE.						

Deck 4 Navigation Bridge Deck							Library/Distress Signals
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Foil-faced fibrous insulation (Roxul-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	Compartment was undergoing refit during the 2017 assessment.						

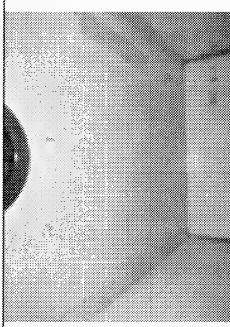
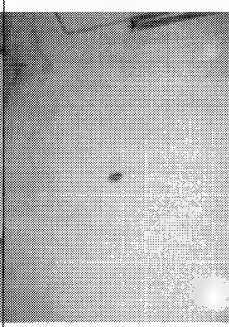
Deck 4 Navigation Bridge Deck					Alley to Communication Centre		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: <ul style="list-style-type: none">collected by PHH	Good	Non-friable	A	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Epoxy flooring, possibly over asbestos containing floor tiles and/or deck screed.	Epoxy may contain asbestos.	Good	Non-friable	A	7	

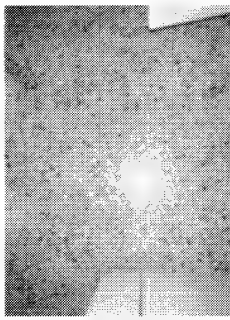
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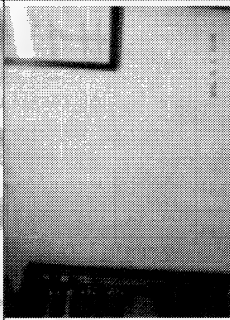

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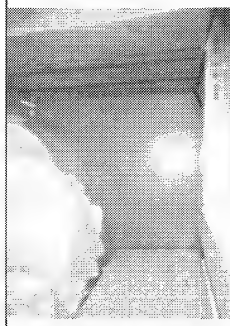
Deck 4 Navigation Bridge Deck					Alley to Communication Centre		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	N/A						


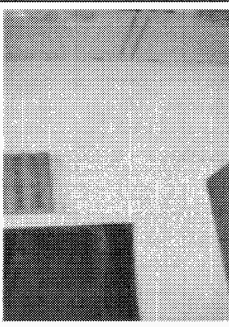

Deck 4 Navigation Bridge Deck						Washroom (N-12)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marine panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7	
Lagging	Pipe insulation.	Pipe insulation contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	

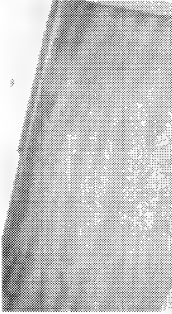
Deck 4 Navigation Bridge Deck							Washroom (N-12)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Epoxy flooring over deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWWest)collected by PEC	Unknown	Non-friable	D	7	
Comments	N/A						

Deck 4 Navigation Bridge Deck							Communication Centre/ Server Room			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph			
Deckhead	Foil-faced fibrous insulation (Roxul-type).	No suspect asbestos.	N/A	N/A	N/A	N/A				
	Non-asbestos marine panels over foil-faced fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A				
Lagging	Armaflex insulation on ducts.	No suspect asbestos.	N/A	N/A	N/A	N/A				
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7				
Deck	Epoxy over deck screed.	Epoxy may contain asbestos	Good	Non-friable	A	7				


Deck 4 Navigation Bridge Deck					Communication Centre/ Server Room		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC 	Unknown	Non-friable	D	7	
Comments		N/A					

Deck 4 Navigation Bridge Deck					Communication Centre Closet		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	None observed.	N/A	N/A	N/A	N/A	N/A	Photograph not available.
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						

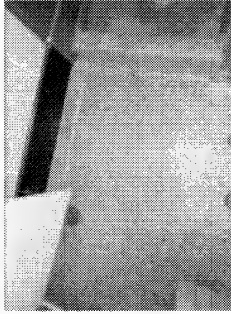
Deck 4 Navigation Bridge Deck							Spare (N-5)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7	
Lagging	Armaflex insulation on ducts.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Pipe lagging	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Unknown (concealed)	Friable	C (concealed)	7	


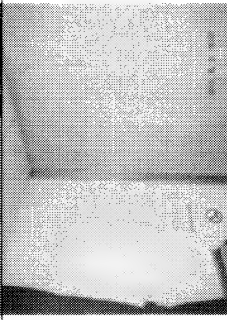
Deck 4 Navigation Bridge Deck							Spare (N-5)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Red duct mastic	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Carpet over asbestos tile and/or deck screed	Floor tile contains asbestos based on sample results: • 32927-1: Chief Engineer (B-6) (1% Chrysotile)	Unknown	Non-friable	D	7	
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non-friable	D	7	
Comments	N/A						

Deck 3 Boat Deck							Chief Officer (B-8)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Unknown	Friable	C (concealed)	7		
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	Photograph not available.	

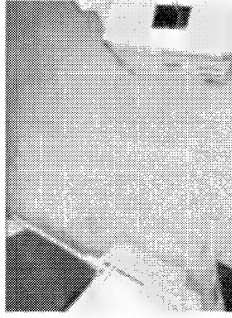
Deck 3 Boat Deck							Chief Officer (B-8)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A		
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC 	Unknown	Non-friable	D	7		
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none"> 32927-1 Floor Tile (Tan) NWest Collected by PEC 	Unknown (concealed)	Non-friable	D	7		
Comments	N/A							

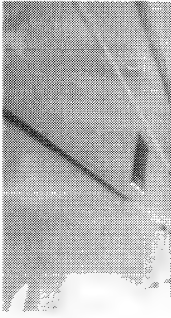

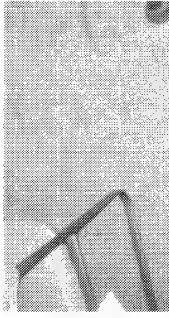
Deck 3 Boat Deck							Chief Officer Washroom	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Non-asbestos marine panels over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		
Deck	Epoxy coating over deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A		

Deck 3 Boat Deck								Chief Officer Washroom		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph			
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWWest)collected by PEC	Unknown	Non-friable	D	7				
Comments	N/A									

Deck 3 Boat Deck							Chief Engineer (B-6)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	Photograph not available.	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7		

Photograph not available.

Deck 3 Boat Deck							Chief Engineer (B-6)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile and/or deck screed	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	N/A						

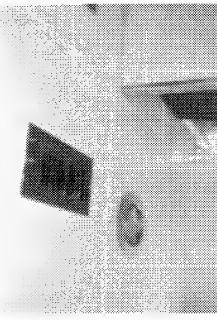
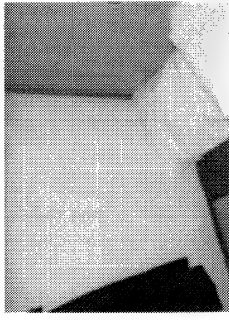

Deck 3 Boat Deck							Commanding Officer (B-3)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		
Deck	Carpet over asbestos tile and/or deck screed	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A		
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non-friable	D	7		

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Deck 3 Boat Deck							
Commanding Officer (B-3)							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">• 32927-1 Floor Tile (Tan) NWest• Collected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	N/A						

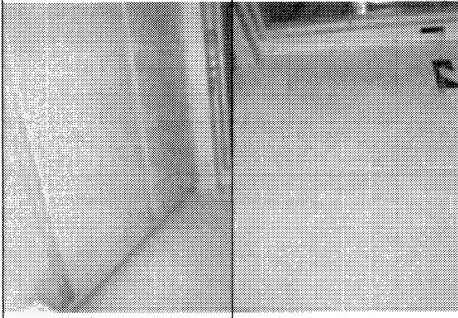
Deck 3 Boat Deck		Commanding Officer's Washroom (B01)					
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over foil-faced fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Epoxy coating over deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A	

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Deck 3 Boat Deck							
Commanding Officer's Washroom (B01)							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest) <ul style="list-style-type: none">collected by PEC	Unknown	Non-friable	D	7	
Comments	N/A						

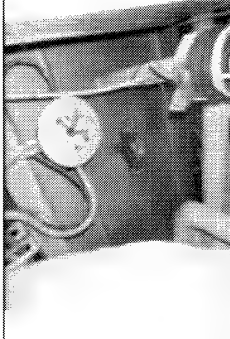
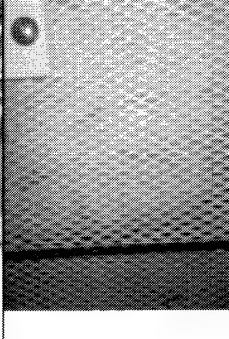
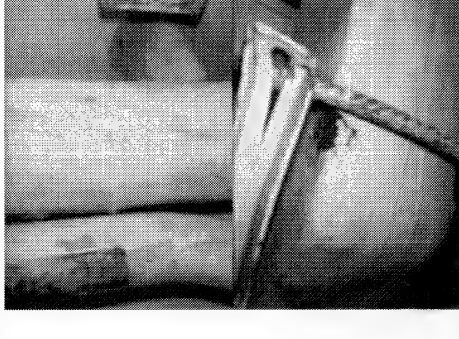
Deck 3 Boat Deck							Starboard Alleyway Out (1)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		
Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Floor tiles, if present, presumed to contain asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest • Collected by PEC	Unknown	Non-friable	D	7	Photograph not available.	


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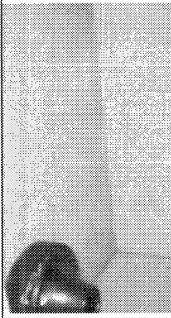

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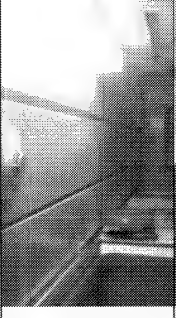

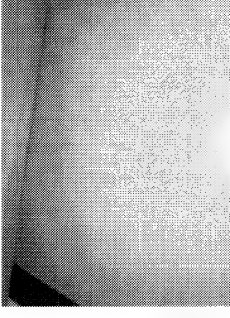
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Asbestos Condition Report

Deck 3 Boat Deck		Starboard Alleyway Out (1)					
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Comments	N/A						

Deck 3 Boat Deck							
Fan Room (B9)							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe insulation.	Pipe lagging suspected of containing asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	A	7	
	Ducts: Textile and plastic moulding over fibrous insulation (navy board system). over Armaflex over insulation	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Armaflex insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	

Deck 3 Boat Deck								Fan Room (B9)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A			
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7			
Comments	N/A								

Deck 3 Boat Deck						Port Linen Locker		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Wood	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	Photograph not available.	
Deck	Carpet over deck screed.	Carpet – no suspect asbestos. Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	N/A	N/A	N/A	N/A		
Comments	N/A							


Deck 3 Boat Deck							Forward Athwartship Alleyway		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A			
Bulkhead	Asbestos containing marine panel	Marine panels contain asbestos based on sample results: • collected by PEC	Good	Non-friable	A	7			
Lagging	None observed.	N/A	N/A	N/A	N/A	N/A	N/A		
Deck	Resilient sheet flooring over asbestos tile and/or deck screed	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A			
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non-friable	D	7			
		Floor tiles, if present, presumed to contain asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest	Unknown (concealed)	Non-friable	D	7			

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Deck 3 Boat Deck							Forward Athwartship Alleyway		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
		• Collected by PEC							
Comments	N/A								




Deck 3 Boat Deck						
Forward Stairwell (Deck 3 Boat Deck to Poop Deck)						
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action
Deckhead	Non-asbestos marine panels over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A
		No suspect asbestos.	N/A	N/A	N/A	N/A
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7
Deck	Resilient sheet flooring over asbestos tile and/or deck screed	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation	Unknown	Non-friable	D	7
						Photograph not available.
						

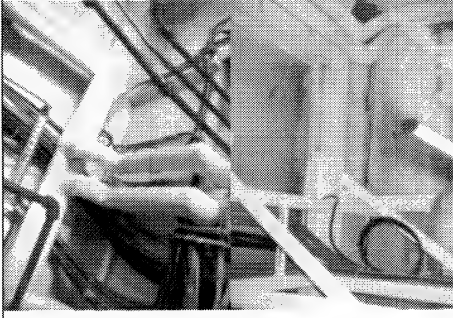

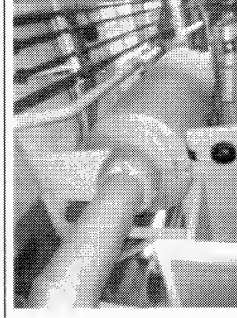
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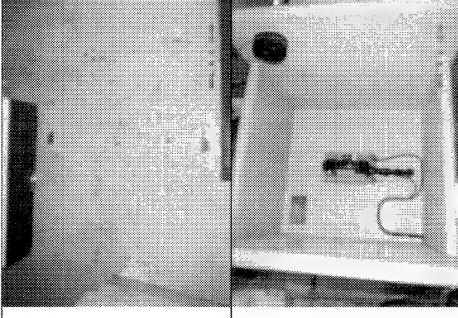
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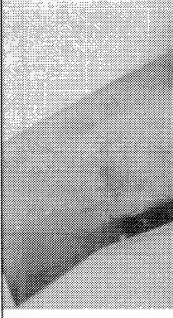
Deck 3 Boat Deck			Forward Stairwell (Deck 3 Boat Deck to Poop Deck)				
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		(NWest) • collected by PEC Floor tiles, if present, presumed to contain asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest • Collected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments		N/A					





Boat Gear Locker (B11)							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	Photograph not available.
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						

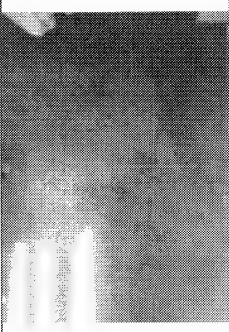
Emergency Generator Room (B15)							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over foil-faced fibrous insulation (Roxul-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over foil-faced fibrous insulation (Roxul and Fibreglass-types).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe Runs: Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	High temperature	No suspect asbestos.	N/A	N/A	N/A	N/A	


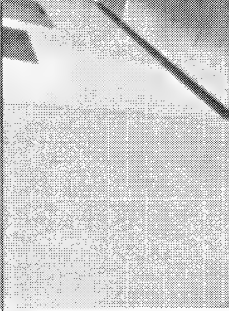
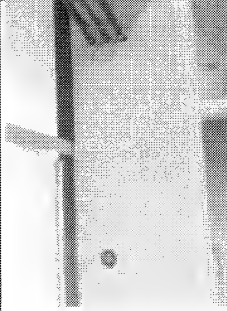
Deck 3 Boat Deck							Emergency Generator Room (B15)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
	jacket.								
	Pipe elbows: Cementitious elbows and fittings.	Pipe lagging suspected of containing asbestos based on sample results: <ul style="list-style-type: none">• collected by PHH• collected by PEC	Good	Friable	A	7			
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A			
Other	Acoustic phone booth.	Liner or insulation - may contain asbestos.	Unknown	Friable	D	7			
Comments	N/A								

Deck 3 Boat Deck							
Battery Room (B13)							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe runs: Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Pipe elbows: Cementitious elbows and fittings.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Non-friable	A	7	

Deck 3 Boat Deck					Battery Room (B13)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Anti-skid coating.	May contain asbestos in original coatings beneath newer non-asbestos coatings	Good	Non-friable	A	7	
Comments	N/A						

Deck 3 Boat Deck						SAR Equipment (B14)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe runs: Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	

Deck 3 Boat Deck					SAR Equipment (B14)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Pipe elbows: Cementitious elbows and fittings.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none"> collected by PHH collected by PEC 	Good	Non-friable	A	7	
	Ducts: Perforated metal over foil-faced fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none"> collected by PEC 	Good	Non-friable	C (concealed)	7	
	Anti-skid coating	May contain asbestos in original coatings beneath newer non-asbestos coatings	Good	Non-friable	A	7	
Comments	N/A						

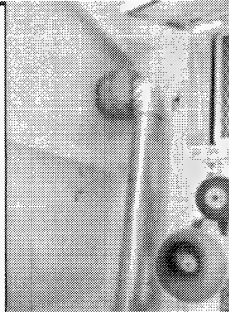


Deck 3 Boat Deck							Port Alleyway (Out)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Not observed.	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A	
Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A		
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC	Unknown	Non-friable	D	7		

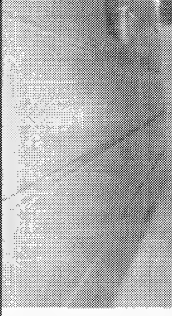


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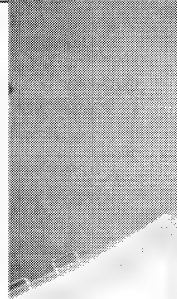
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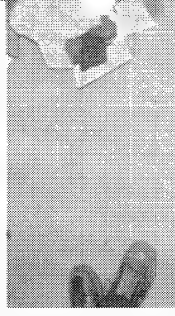
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Deck 3 Boat Deck			Port Alleyway (Out)				
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">• 32927-1 Floor Tile (Tan) NWest• Collected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	N/A						

Deck 3 Boat Deck								Superstructure (Outer Deck)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph				
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A					
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A					
Lagging	17oz Grey canvas jacketing over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A					
	Metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A					
Deck	Anti-skid coating.	May contain asbestos in original coatings beneath newer non-asbestos coatings	Good	Non-friable	A	7					
Comments	N/A										

Deck 2 Poop Deck							Second Officer's Cabin (P3)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph			
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A				
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A				
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7				
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7				
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7				
Deck	Carpet over asbestos tile and/or deck	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.			

Deck 2 Poop Deck			Second Officer's Cabin (P3)				
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	screed	Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	Liner under window removed during VLE 2009-2010.						




Deck 2 Poop Deck							Third Officer's Cabin (P-1)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A			
Bulkhead	Asbestos containing Marinite panels (except under windows).	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7			
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.		
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7			
Deck	Carpet over asbestos tile and/or deck screed	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A			
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown	Unknown	Non-friable	D	7			

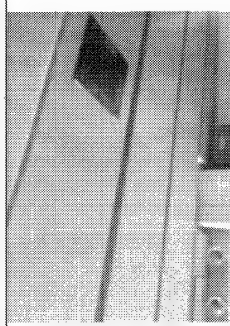

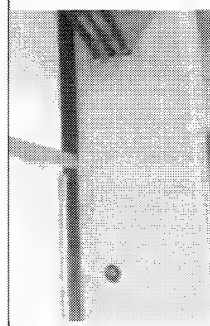
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Asbestos Condition Report

Deck 2 Poop Deck							Third Officer's Cabin (P-1)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
		insulation (NWest) collected by PEC							
		Floor tiles, if present, presumed to contain asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest Collected by PEC	Unknown (concealed)	Non- friable	D	7			
Comments	Liner under window removed during VLE 2009-10.								

Deck 2 Poop Deck						Washroom	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	
Deck		No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



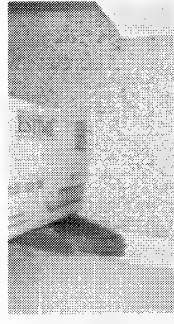
Deck 2 Poop Deck								Alley to Crew's Mess	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A			
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A			
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: <ul style="list-style-type: none">collected by PHH	Fair	Non-friable	A	5/6			
	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	Photograph not available.		
Lagging	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7			
	Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Resilient sheet flooring – no suspect asbestos Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown	N/A	N/A	N/A	N/A		
			Unknown	Non-friable	D	7			



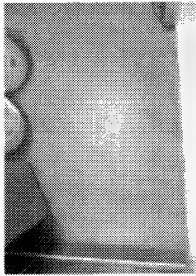
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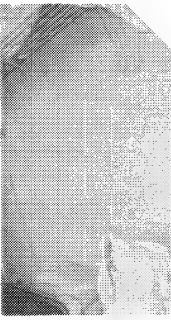
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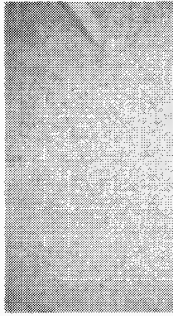
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Asbestos Condition Report



Deck 2 Poop Deck				Alley to Crew's Mess				
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
		<ul style="list-style-type: none">insulation (NWest) collected by PEC Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7		
Comments	N/A							


Deck 2 Poop Deck							Stationery Locker	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	Photograph not available.	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7		
Deck	Epoxy coating over deck screed.	Epoxy (Rada) is non-ACM as per manufacturer. Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWWest)collected by PEC	N/A	N/A	N/A	N/A		
Comments								

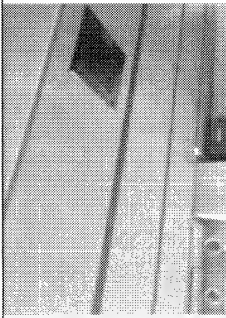

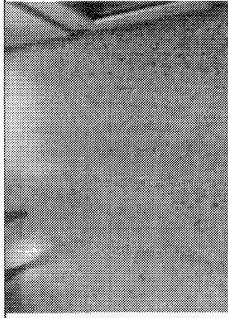
Deck 2 Poop Deck				Starboard Dry Stores Locker (Suspected to have previously been the incinerator room)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal panels.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Metal panels.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Deck	Epoxy coating over deck screed.	Epoxy may contain asbestos. Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Good	Non-friable	A	7	
Comments	N/A						



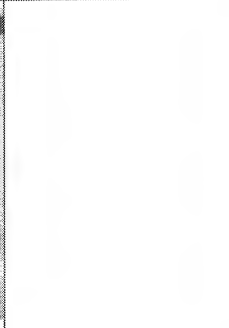
Deck 2 Poop Deck								Port Dry Stores Locker			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph				
Deckhead	Metal panels.	No suspect asbestos.	N/A	N/A	N/A	N/A					
Bulkhead	Metal panels.	No suspect asbestos.	N/A	N/A	N/A	N/A					
Lagging	Not observed.	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A				
Deck	Epoxy coating over deck screed.	Epoxy may contain asbestos. Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWWest)collected by PEC	Good Unknown	Non-friable Non-friable	A D	7 7					
Comments	N/A										

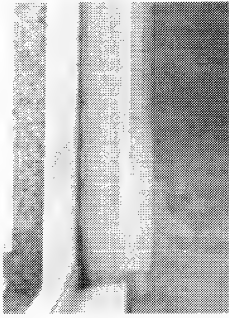
Deck 2 Poop Deck							Cress's Mess (P13)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Epoxy coating over deck screed.	Epoxy may contain asbestos.	Good	Non-friable	A	7	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7	
Comments	N/A						


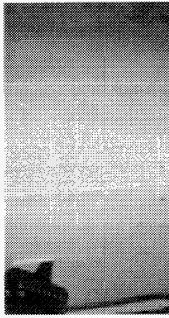
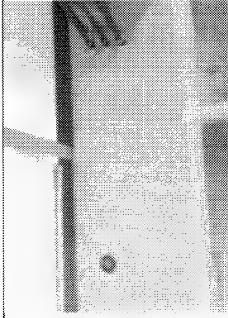
Deck 2 Poop Deck						Galley (P16)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Metal panels over fibrous insulation	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Epoxy coating over deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A	

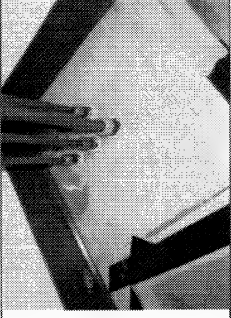
Deck 2 Poop Deck					Galley (P16)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC 	Unknown	Non-friable	D	7	
Comments					N/A		


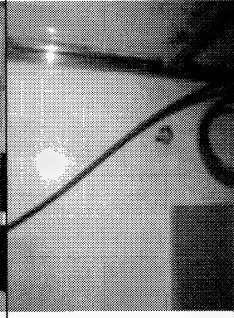
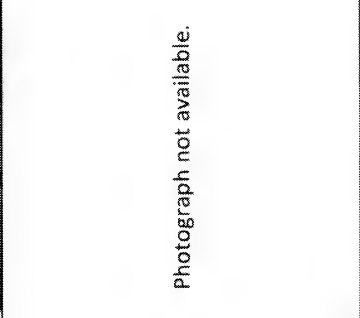
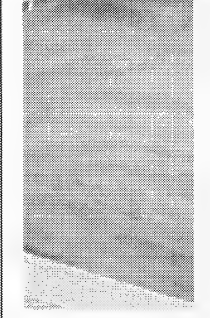
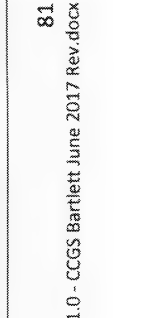
Deck 2 Poop Deck								Crew's Lounge and Canteen			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph				
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A					
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A					
Lagging	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.				
Deck	Epoxy coating over deck screed.	Epoxy may contain asbestos. Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWWest)collected by PEC	Good	Non-friable	A	7					
Comments	Liners removed during VLE 2009-2010.										

Deck 2 Poop Deck						Port Alley Out	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	

Deck 2 Poop Deck					Port Alley Out		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	N/A						

Deck 2 Poop Deck				Port Alley to Crew's Lounge			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos containing marine panels	Marine panels contain asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	A	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on	Unknown	Non-friable	D	7	

Deck 2 Poop Deck			Port Alley to Crew's Lounge				
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none"> 32927-1 Floor Tile (Tan) NWest Collected by PEC 	Unknown (concealed)	Non-friable	D	7	
Other	Caulking (white).	May contain asbestos	Good	Non-friable	A	7	
Comments	N/A						

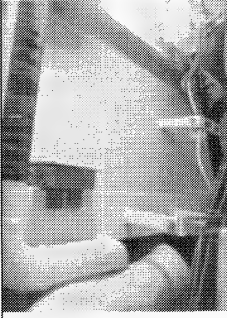


Deck 2 Poop Deck						Two Passengers (P12)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A			
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A			
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7			
	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7			
Lagging	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7			
	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos. Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown	N/A	N/A	N/A	N/A			
Deck			Unknown	Non-friable	D	7			

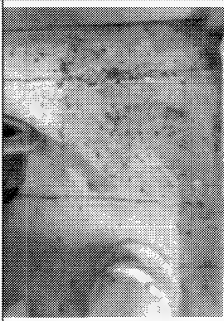
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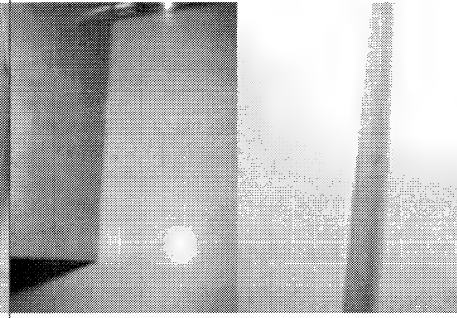
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Asbestos Condition Report




Deck 2 Poop Deck				Two Passengers (P12)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		<ul style="list-style-type: none">insulation (NWWest) collected by PEC					
		<ul style="list-style-type: none">Floor tiles, if present, presumed to contain asbestos based on sample results:<ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWWestCollected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	Liner under window removed during VLE 2009-2010.						

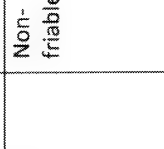
Deck 2 Poop Deck							Fan Room (P10)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe runs: Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Cementitious elbows and fittings.	Pipe elbows and fittings contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		


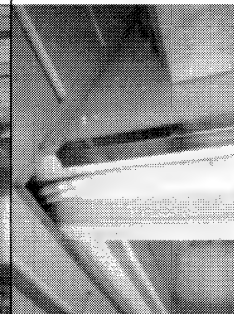

Deck 2 Poop Deck							Fan Room (P10)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Comments	N/A							

Deck 2 Poop Deck							Supply Officer (P6)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos containing marine panels (except under window)	Marine panels contain asbestos based on sample results: • collected by PEC	Good	Non-friable	A	7		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		

Deck 2 Poop Deck								Supply Officer (P6)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A			
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7			
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7			
Comments	N/A								

Ship's Office Logistics (P2)							
Deck 2 Poop Deck							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos containing marine panels (except under window).	Marine panels contain asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos. Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC	N/A	N/A	N/A	N/A	
			Unknown	Non-friable	D	7	

Deck 2 Poop Deck		Ship's Office Logistics (P2)					
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none"> 32927-1 Floor Tile (Tan) NWest Collected by PEC 	Unknown (concealed)	Non-friable	D	7	
Other	Window mastic (Black).	May contain asbestos	Good	Non-friable	A	7	
Comments		Liner under window removed during VLE 2009-2010.					


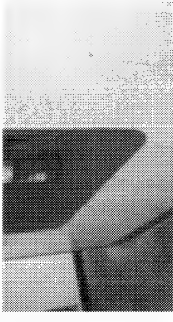
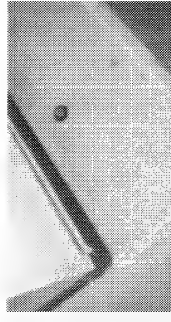
Deck 2 Poop Deck								Officer's Washroom (P4)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph				
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A					
Bulkhead	Asbestos containing marine panels (except under window).	Marine panels contain asbestos based on sample results: <ul style="list-style-type: none">collected by PEC.	Good	Non-friable	A	7					
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	Photograph not available.				
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7					
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos. Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	N/A	N/A	N/A	N/A					
			Unknown	Non-friable	D	7					

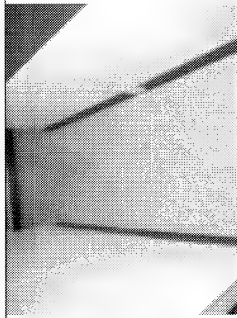
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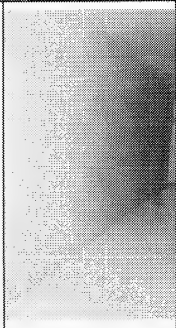
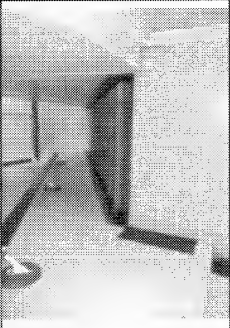

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Deck 2 Poop Deck			Officer's Washroom (P4)				
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">• 32927-1 Floor Tile (Tan) NWest• Collected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	N/A						

Deck 2 Poop Deck				Athwartship Alleyway (5) by Stairs			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Non-asbestos marine panels over fibrous insulation. Asbestos Marinite panels.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7	
	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	
Lagging	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	Photograph not available.
	Resilient sheet flooring over asbestos tile and/or deck screed.	Resilient sheet flooring -- no suspect asbestos	N/A	N/A	N/A	N/A	
Deck		Deck screed contains asbestos based on sample results:	Unknown	Non-friable	D	7	

Deck 2 Poop Deck			Athwartship Alleyway (5) by Stairs				
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		<ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC					
		<p>Floor tiles, if present, presumed to contain asbestos based on sample results:</p> <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments			N/A				

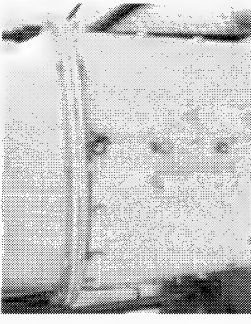
Deck 2 Poop Deck				Forward Stairs from Poop Deck to Upper Deck			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Resilient sheet flooring and stair treads over asbestos tile and/or deck screed.	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC Floor tiles, if present, presumed to contain	Unknown	Non-friable	D	7	
			Unknown (concealed)	Non-friable	D	7	

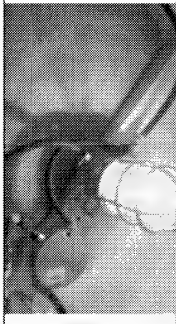
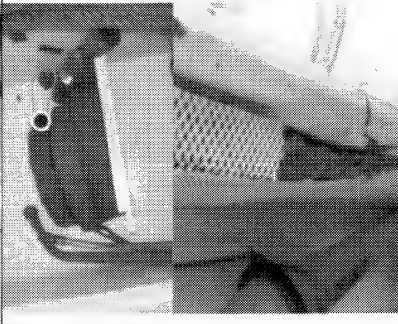
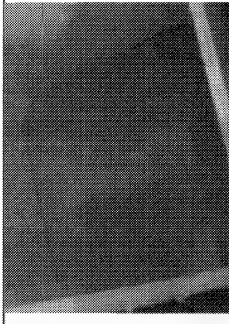
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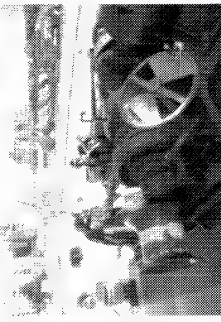


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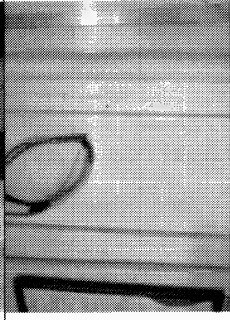

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Deck 2 Poop Deck		Forward Stairs from Poop Deck to Upper Deck					
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		asbestos based on sample results: <ul style="list-style-type: none">• 32927-1 Floor Tile (Tan) NWest• Collected by PEC					
Comments	N/A						

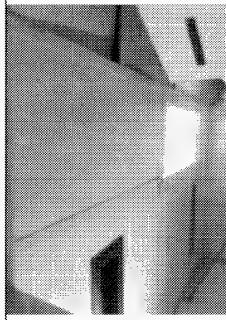

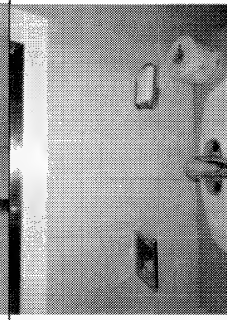

Deck 2 Poop Deck				Aft Vent to Auxiliary Engine Room – Exterior Gaskets			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	N/A	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Bulkhead	N/A	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Lagging	N/A	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Deck	N/A	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Other	Ductwork gaskets (various colours).	Gaskets contain asbestos based on sample results: <ul style="list-style-type: none"> 10410-22 Auxiliary Machine Space (collected by PEC, March 19, 2010) 	Unknown	Non-friable	D	7	
Comments	All gaskets throughout the vessel are assumed to contain asbestos unless determined otherwise by analytical testing.						


Deck 2 Poop Deck				Aft Fire Equipment Compartment			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						


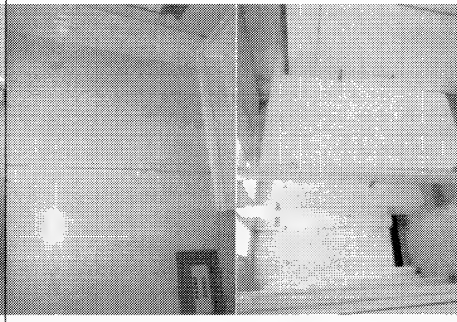
Deck 2 Poop Deck							Exterior Foc'sle Deck		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A			
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A		
Deck	Anti-skid coating.	May contain asbestos in original coatings beneath newer non-asbestos coatings	Good	Non-friable	A	7			
Other	Windlass brake bands (brown).*	No suspect asbestos	Good	Non-friable	A	7			
Comments	* Asbestos break bands were replaced with non-asbestos bands in June 2015, as per Client and United Engineering document.								



Deck 1 Upper Deck							Senior Engineer (U17)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over foil-faced fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
Lagging	Post refit: Not observed.	N/A	N/A	N/A	N/A	N/A	N/A	

Deck 1 Upper Deck					Senior Engineer (U17)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC 	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none"> 32927-1 Floor Tile (Tan) NWest Collected by PEC 	Unknown (concealed)	Non-friable	D	7	
Comments	Forward Bulkhead: Asbestos containing marine panel removed (May 2016), non-asbestos insulation and 'Norac' joiner panel supplied by ProNautic Ship Interiors.						

Deck 1 Upper Deck				Senior Engineer's Washroom (U-19)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over foil-faced fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: <ul style="list-style-type: none">collected by PHH	Good	Non-friable	A	7	
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging							

Deck 1 Upper Deck				Senior Engineer's Washroom (U-19)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Epoxy over asbestos tile and/or deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC 	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none"> 32927-1 Floor Tile (Tan) NWest Collected by PEC 	Unknown (concealed)	Non-friable	D	7	
Comments	N/A						

Deck 1 Upper Deck				Aft Crew's Washroom and Closet			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	



Deck 1 Upper Deck				Aft Crew's Washroom and Closet			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Lagging	Textile over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Deck	Epoxy over asbestos tile and/or deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC 	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none"> 32927-1 Floor Tile (Tan) NWest 	Unknown (concealed)	Non-friable	D	7	

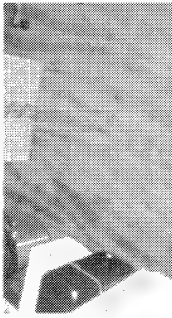
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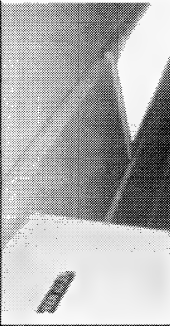
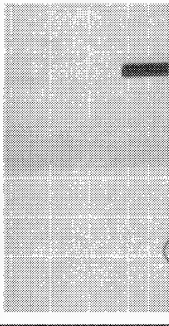
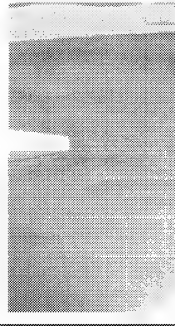
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Deck 1 Upper Deck				Aft Crew's Washroom and Closet			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		• Collected by PEC					
Comments	N/A						

Deck 1 Upper Deck						Second Engineer (U23)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		

Deck 1 Upper Deck								Second Engineer (U23)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A			
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC	Unknown	Non-friable	D	7			
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7			
Comments	N/A								


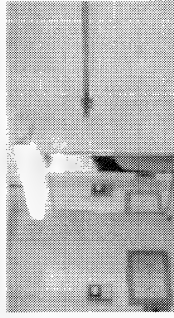
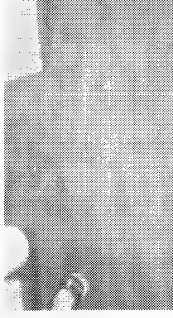
Deck 1 Upper Deck						Third Engineer (U27)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos. Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	N/A	N/A	N/A	N/A		
			Unknown	Non-friable	D	7		

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Deck 1 Upper Deck							Third Engineer (U27)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
		<ul style="list-style-type: none">collected by PEC Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7		
Comments	VLE 2009 – 2010: Removal of deck steel plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent.							

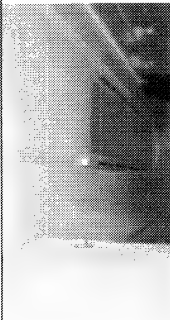
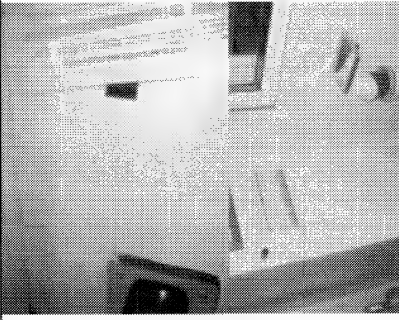
Deck 1 Upper Deck						Two Oilers (U29)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos. Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	N/A	N/A	N/A	N/A		
			Unknown	Non-friable	D	7		


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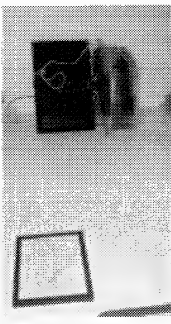
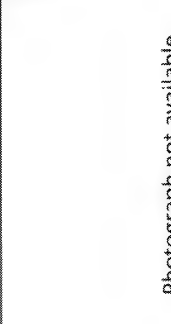

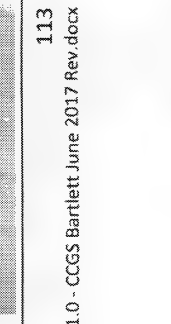
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Deck 1 Upper Deck							Two Oilers (U29)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">• 32927-1 Floor Tile (Tan) NWest• Collected by PEC	Unknown (concealed)	Non-friable	D	7		
Comments	VLE 2009 – 2010: Removal of deck steel plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent.							

Deck 1 Upper Deck						Two Passengers (U31)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	Photograph not available.	

Deck 1 Upper Deck								Two Passengers (U31)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A			
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">• 16579-1 to 3 Deck screed and brown insulation (NWest)• collected by PEC	Unknown	Non-friable	D	7			
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">• 32927-1 Floor Tile (Tan) NWest• Collected by PEC	Unknown (concealed)	Non-friable	D	7			
Comments	VLE 2009 – 2010: Removal of deck steel plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent.								



Deck 1 Upper Deck						Cook and Steward (U33)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		
Lagging	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		
	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos. Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck	N/A	N/A	N/A	N/A		


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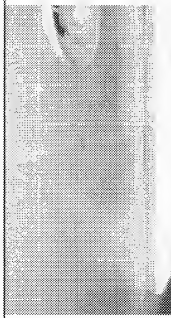

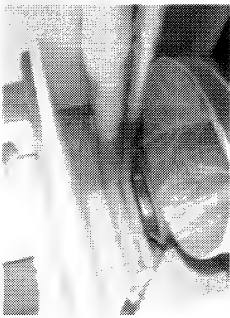
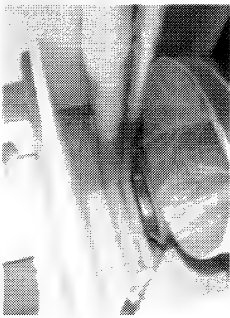
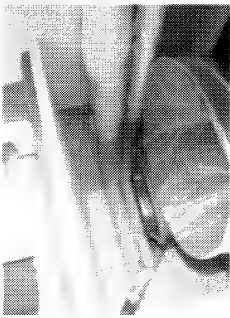
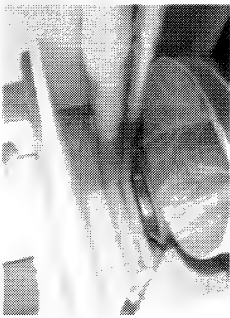
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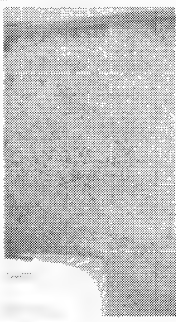
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Asbestos Condition Report





Deck 1 Upper Deck							
Cook and Steward (U33)							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		screed and brown insulation (NWest) <ul style="list-style-type: none"> collected by PEC Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none"> 32927-1 Floor Tile (Tan) NWest Collected by PEC 	Unknown (concealed)	Non-friable	D	7	
Comments	VLE 2009 – 2010: Removal of deck steel plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent.						


Deck 1 Upper Deck							Chief Cook (U35)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Asbestos containing marine panels	Marine panels contain asbestos based on sample results: • collected by PEC	Good	Non-friable	A	7		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	Photograph not available.	




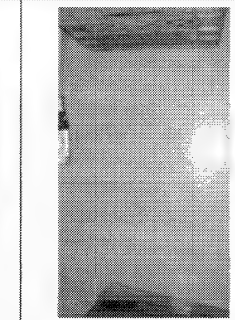
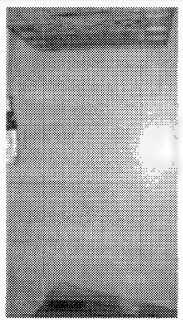
Deck 1 Upper Deck							Chief Cook (U35)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A		
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7		
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7		
Comments	VLE 2009 – 2010: Removal of deck steel plate from outboard bulkhead to approximately 6’ inboard. Unable to verify extent.							


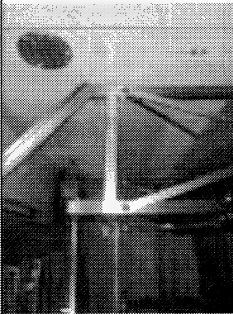

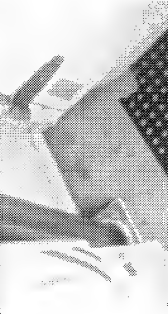
Deck 1 Upper Deck							Laundry Room (U39)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	Non-asbestos marine panels over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A			
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A			
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7			
	Asbestos containing pipe insulation.	Pipe insulation and fittings contain asbestos based on sample results: • collected by PHH	Good	Friable	A	7			
Deck	Textile and plastic moulding over fibrous insulation (navy board system).	No suspect asbestos.	N/A	N/A	N/A	N/A			
	Epoxy over deck screed	Epoxy may contain asbestos.	Good	Non-friable	A	7			


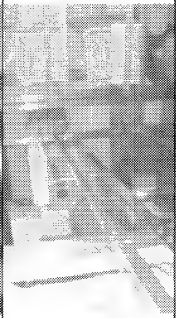
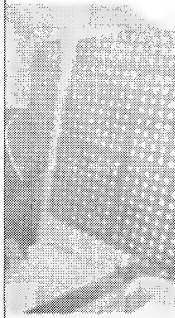
Deck 1 Upper Deck					Laundry Room (U39)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC 	Unknown	Non-friable	D	7	
Comments		N/A					




Deck 1 Upper Deck						Steering Gear Compartment		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Armaflex insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	High temperature jacketing and metal mesh over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		

Deck 1 Upper Deck				Steering Gear Compartment			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						

Deck 1 Upper Deck							Loan Clothing / Stores	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Armaflex	No suspect asbestos.	N/A	N/A	N/A	N/A		
Deck	Painted deck screed over thermobestos block insulation.	Deck screed and block insulation contain asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC	Deck screed: Good Block insulation: debris (if exposed)	Deck screed: Non-friable Block insulation: Friable	Deck screed: A Block insulation: D	7		
Comments	N/A							

Cold Storage							
Deck 1 Upper Deck							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Armaflex insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	Liners removed during VLE 2009 – 2010.						

Deck 1 Upper Deck							Cool Storage
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Armaflex insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



Deck 1 Upper Deck						Two Seaman (U38)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7	
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Post Refit: Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain	Unknown (concealed)	Non-friable	D	7	

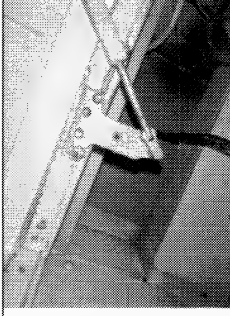
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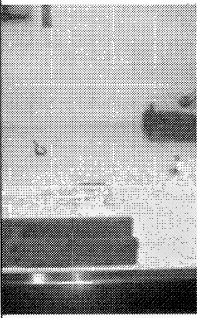
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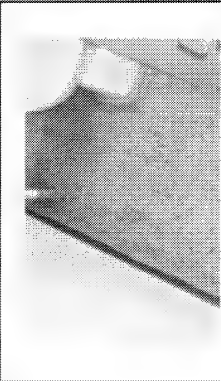
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Asbestos Condition Report

Deck 1 Upper Deck					Two Seaman (U38)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
		asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC						
Comments	N/A							

Deck 1 Upper Deck				Auxiliary Machinery Space Escape			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments	N/A						

Deck 1 Upper Deck							
Engine Room Escape (U-18)							
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments	N/A						

Deck 1 Upper Deck		Starboard Forward Crew's Washroom (U-21)					
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over foil-faced fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Epoxy over deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A	

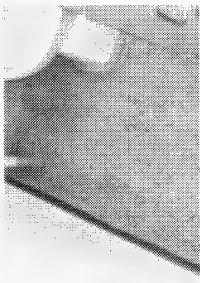
Deck 1 Upper Deck					Starboard Forward Crew's Washroom (U-21)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWWest) collected by PEC 	Unknown	Non-friable	D	Action 7 Monitor in place with routine surveillance	
Comments		N/A					

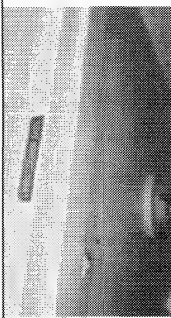


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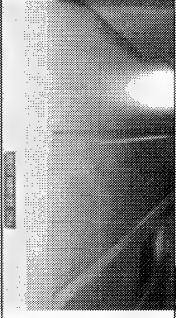
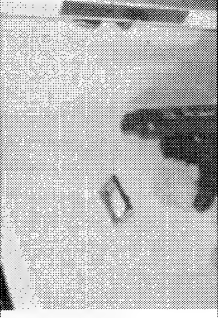

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Asbestos Condition Report

Deck 1 Upper Deck								Port Forward Crew's Washroom (U-20)			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph				
Deckhead	Non-asbestos marine panels over foil-faced fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available				
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A					
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: <ul style="list-style-type: none">collected by PHH	Good	Non-friable	A	7	Photograph not available				
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	Photograph not available.				
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7					
Deck	Epoxy over possible deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A					

Deck 1 Upper Deck			Port Forward Crew's Washroom (U-20)				
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWWest) collected by PEC 	Unknown	Non-friable	D	7	
Comments		N/A					

Deck 1 Upper Deck				Linen Locker between U26 and U30			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						

Deck 1 Upper Deck							Two Seaman (U36)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A	
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A		
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWWest) collected by PEC Floor tiles, if present, presumed to contain asbestos based on sample results:	Unknown	Non-friable	D	7		
			Unknown (concealed)	Non-friable	D	7		

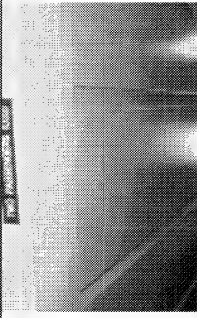
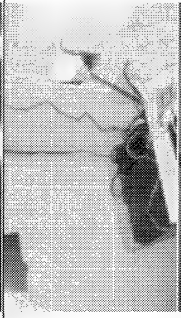
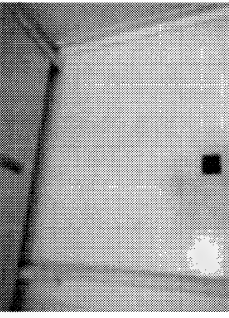
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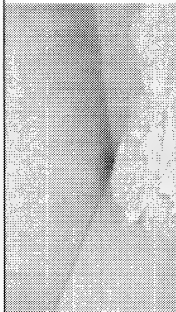


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Asbestos Condition Report



Deck 1 Upper Deck							Two Seaman (U36)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
		<ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC							
Comments	VLE 2009 – 2010: Removal of deck steel plate from outboard bulkhead to approximately 6’ inboard. Unable to verify extent.								

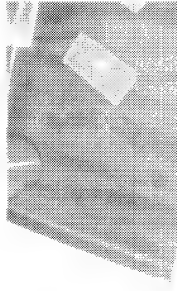



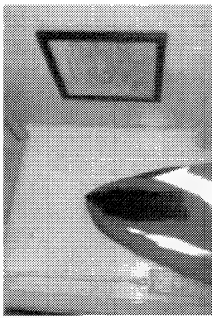
Deck 1 Upper Deck							Two Passengers (U32)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		
Lagging	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		

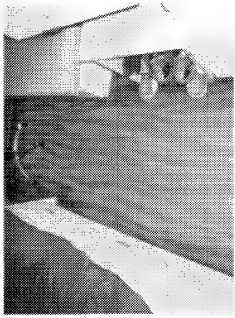
Deck 1 Upper Deck							Two Passengers (U32)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A		
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest) <ul style="list-style-type: none">collected by PEC	Unknown	Non-friable	D	7		
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWest Collected by PEC	Unknown (concealed)	Non-friable	D	7		
Comments	N/A							

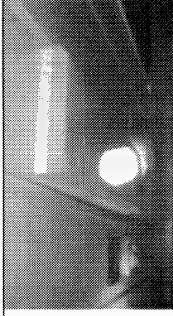

Deck 1 Upper Deck					Linen Locker in Aft Athwartship Alley		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Wood over possible fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Maranite panels	Marine panels contain asbestos based on sample results: • collected by PEC	Good	Non-friable	A	7	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Deck screed over thermobestos block insulation	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWWest) • collected by PEC	Deck screed: Good Block insulation: debris (if exposed)	Deck screed: Non-friable Block insulation: Friable	Deck screed: A lock insulation: D	7	
Comments	N/A						


Deck 1 Upper Deck							Two Seamen (U30)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
Lagging	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7		


Deck 1 Upper Deck								Two Seamen (U30)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A			
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC	Unknown	Non-friable	D	7			
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7			
Comments	VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent.								


Deck 1 Upper Deck					Two Passengers (U26)/ Leading Seaman				
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	Non-asbestos marine panel over foil-face fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A			
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7			
Lagging	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.		
	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7			
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7			


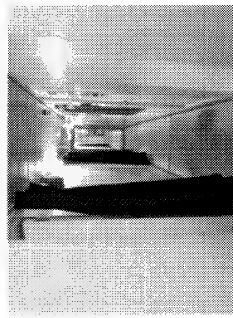
Deck 1 Upper Deck				Two Passengers (U26)/ Leading Seaman			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC 	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none"> 32927-1 Floor Tile (Tan) NWest Collected by PEC 	Unknown (concealed)	Non-friable	D	7	
Comments	VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent.						

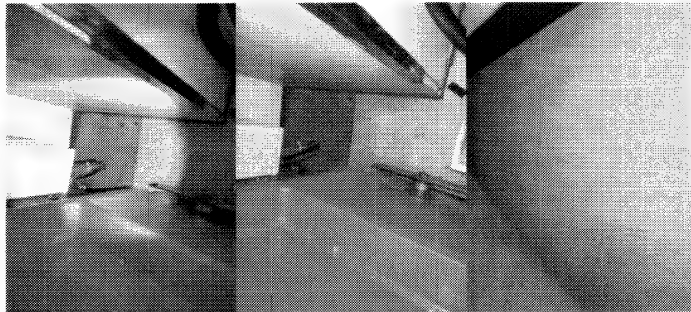
Deck 1 Upper Deck							Two Leading Seaman (U-22)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	N/A	


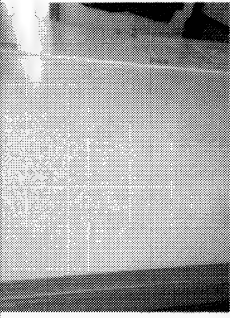
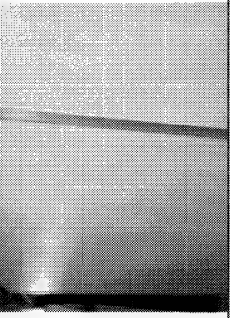

Deck 1 Upper Deck								Two Leading Seaman (U-22)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A			
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">• 16579-1 to 3 Deck screed and brown insulation (NWWest)• collected by PEC	Unknown	Non-friable	D	7			
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">• 32927-1 Floor Tile (Tan) NWWest• Collected by PEC	Unknown (concealed)	Non-friable	D	7			
Comments	VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent.								


Deck 1 Upper Deck						Sick Bay (U16)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over foil-faced fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Epoxy over Deck screed and Thermobestos block insulation	Epoxy may contain asbestos. Deck screed contains asbestos based on sample results:	Good	Non-friable	A	7	
			Debris (if exposed)	Non-friable	D	7	

Deck 1 Upper Deck					Sick Bay (U16)		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		<ul style="list-style-type: none"> 16579-1 to 3 Deck screed and brown insulation (NWWest) collected by PEC 					
		Thermobestos block insulation contains asbestos based on sample results: <ul style="list-style-type: none"> collected by NWWest (16579-3). 	Debris (if exposed)	Friable	D	7	
Comments		Liners removed during VLE 2009-2010. VLE 2009-2010: Removal of deck steal plate from outboard bulk head to approximately 6' inboard. Unable to verify extent.					

Deck 1 Upper Deck							Starboard Alleyway	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7	Photograph not available.	
	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		
Lagging	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	Photograph not available.	

Deck 1 Upper Deck					Starboard Alleyway		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Resilient sheet flooring over asbestos tile and/or deck screed and thermobestos block insulation.	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7	
		Thermobestos block insulation contains asbestos based on sample results: collected by NWest (16579-3).	Debris (if exposed)	Friable	D	Action 7 Monitor in place with routine surveillance	
Comments	N/A						

Deck 1 Upper Deck						Aft Athwartship Alleyway		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		
	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		


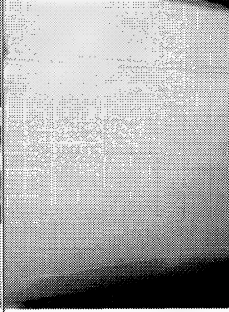
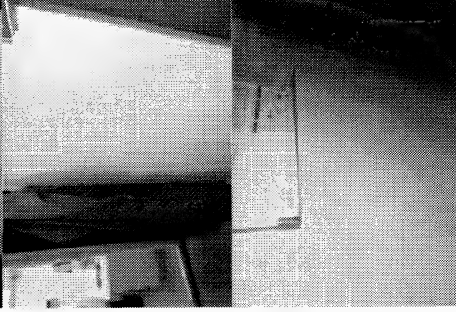
Deck 1 Upper Deck				Aft Athwartship Alleyway			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Resilient sheet flooring over asbestos tile and/or deck screed and thermobestos block insulation.	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest • Collected by PEC	Unknown (concealed)	Non-friable	D	7	
		Thermobestos block insulation	Debris (if exposed)	Friable	D	7	

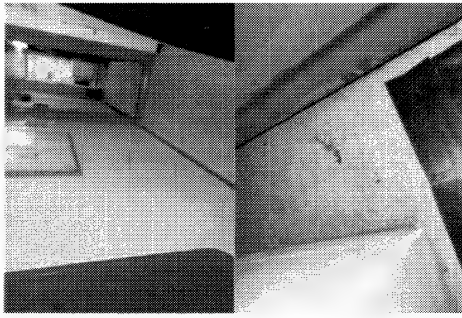
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Deck 1 Upper Deck				Aft Athwartship Alleyway			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		contains asbestos based on sample results: collected by NWest (16579-3).					
Comments	N/A						

Deck 1 Upper Deck							Port Alleyway	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7		

Deck 1 Upper Deck						Port Alleyway	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWWest) • collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos	Unknown (concealed)	Non-friable	D	7	

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Deck 1 Upper Deck							Port Alleyway	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
		based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC						
Comments	Penetrations in marine panel.							

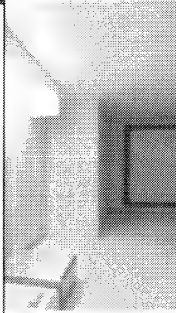

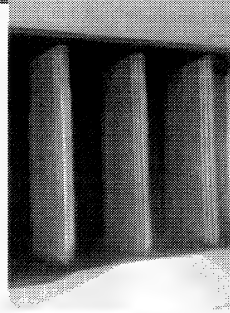


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Deck 1 Upper Deck					Cleaning Locker		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.
Bulkhead	Asbestos containing marine panels	Marine panels contain asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	Access A	7	Photograph not available.
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Deck Screed	May contain asbestos	Good	Non-friable	A	7	Photograph not available.
Comments	No access in 2017.						



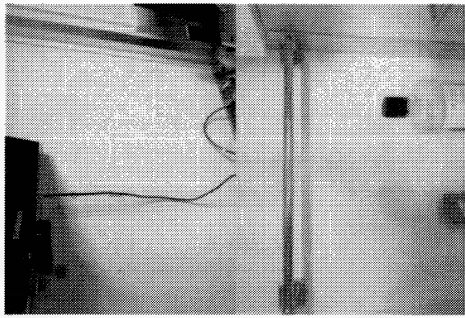
Deck 1 Upper Deck		Aft Stairs from Poop Deck to Upper Deck					
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Resilient sheet flooring – no suspect asbestos Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	N/A	N/A	N/A	N/A	
			Unknown	Non-friable	D	7	


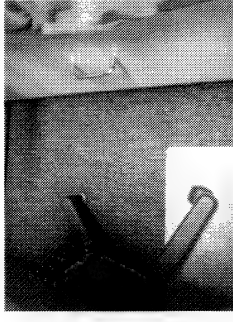
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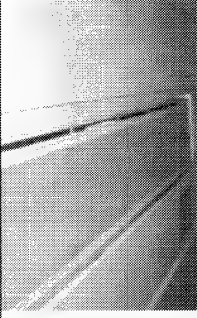


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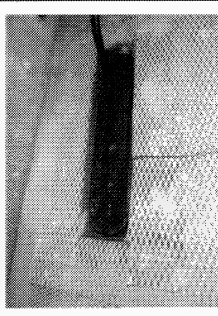

Deck 1 Upper Deck		Aft Stairs from Poop Deck to Upper Deck					
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">• 32927-1 Floor Tile (Tan) NWest• Collected by PEC	Unknown (concealed)	Non-friable	D	7	
	Stair treads.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						


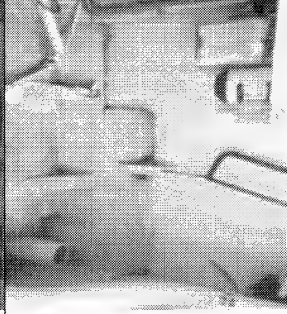

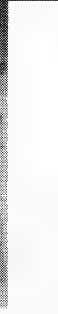
Deck 1 Upper Deck									
Winchman (U14)									
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A			
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	A	7			
	Non-asbestos marine panel.								


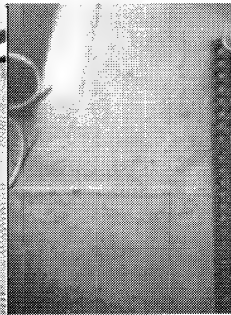
Deck 1 Upper Deck							Winchman (U14)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good	Friable	C (concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	Formerly Senior Bosun.						

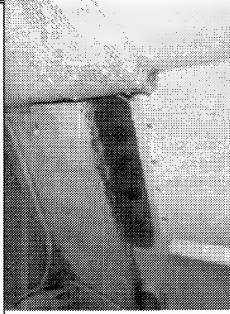

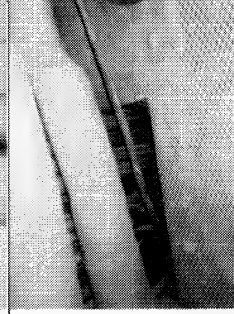

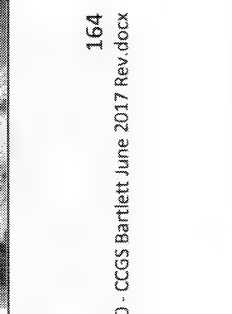
Deck 1 Upper Deck							Bosun (U15)	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	C (concealed)	7		


Deck 1 Upper Deck							Bosun (U15)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: <ul style="list-style-type: none">collected by PEC	Good	Non-friable	C (concealed)	7	
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: <ul style="list-style-type: none">16579-1 to 3 Deck screed and brown insulation (NWest)collected by PEC	Unknown	Non-friable	D	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: <ul style="list-style-type: none">32927-1 Floor Tile (Tan) NWestCollected by PEC	Unknown (concealed)	Non-friable	D	7	
Comments	Formally Chief Cook						


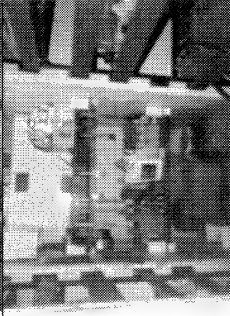
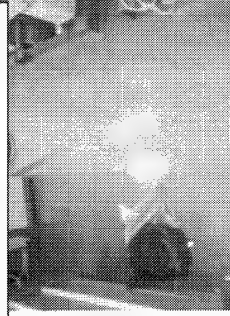
Deck 1 Upper Deck							Bosun's Stores	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Comments	N/A							

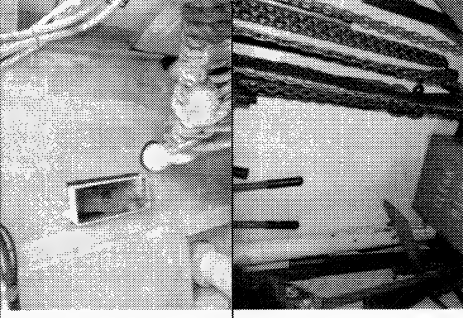
Deck 1 Upper Deck						SCR Drive Room	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	15" Return: Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Pipe lagging	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good-Fair	Friable	A	Good: 7Fair: 5/6	
Lagging	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	


Deck 1 Upper Deck							SCR Drive Room		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
									
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A			
Comments	N/A								

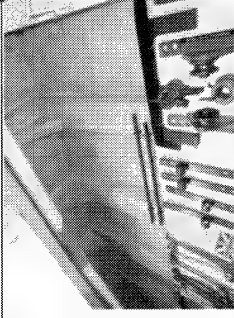
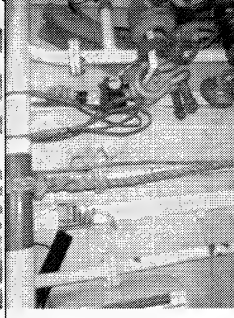
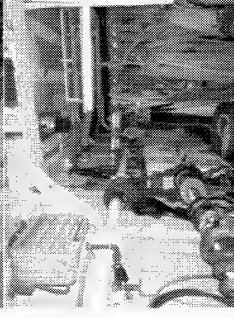
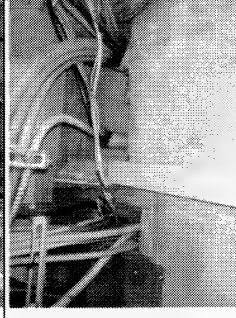
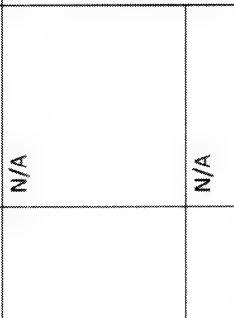
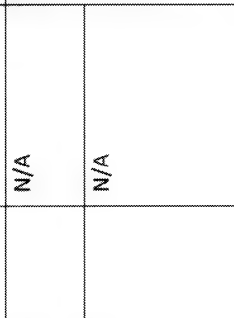
Deck 1 Upper Deck						Foc'sle and Foc'sle Head	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Outboard, by way of generator, and 15" return: Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good-Fair	Friable	A	Good: 7 Fair: 5/6	
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	

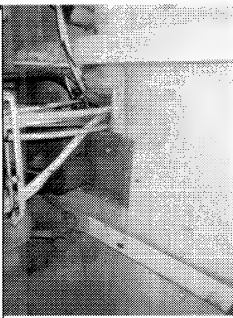
Deck 1 Upper Deck				Foc'sle and Foc'sle Head			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Anti-skid paint on metal.	Anti-skid may contain asbestos in original coatings beneath newer non-asbestos coatings.	Good	Non-friable	A	7	
Comments	N/A						



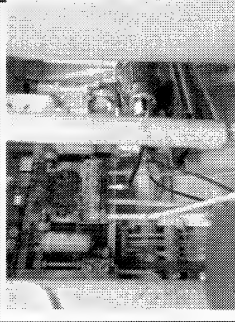
Deck 1 Upper Deck							Paint Locker	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Comments	N/A							

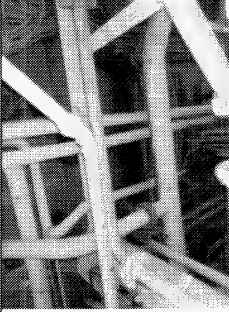
Deck 1 Upper Deck							Workshop	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Pipe lagging	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good-Fair	Friable	A	Good: 7 Fair: 5/6	Photograph not available.	


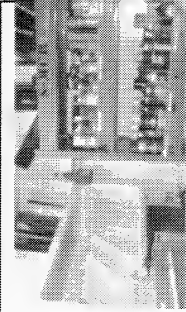

Deck 1 Upper Deck						Workshop	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						

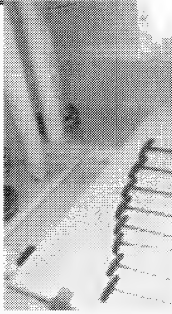


Deck 0 Baseline						Engine Room	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	15" Return and a 10'x4' area: Perforated metal over fibrous insulation (Fibreglass-type). Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good-Fair	Friable	A	Good: 7Fair: 5/6	
	Pipe insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	

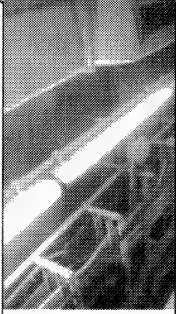
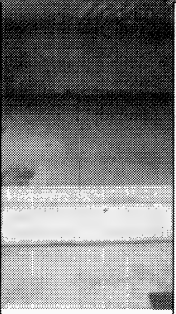


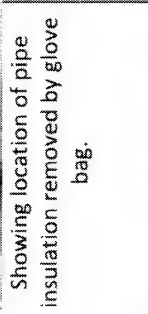
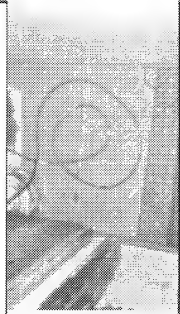
Deck 0 Baseline						Engine Room	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	High temperature jacket.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Textile and plastic moulding over fibrous insulation (navy board system).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Deck	Checker plate metal catwalk.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						

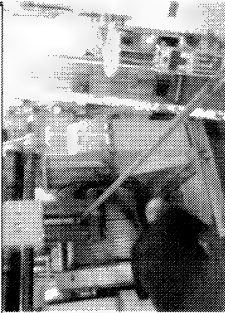
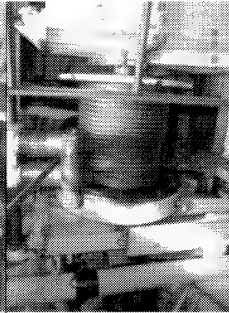
Deck 0 Baseline		Auxiliary Machine Room					
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good-Fair	Friable	A	Good: 7Fair: 5/6	

Deck 0 Baseline				Auxiliary Machine Room			
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	High temperature jacket.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Textile and plastic moulding over fibrous insulation (navy board system).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Deck	Checker plate metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Other	Shaft break bands*	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	* Asbestos break bands were replaced with non-asbestos bands in June 2015, as per Client and United Engineering document.						

Deck 0 Baseline							MCR Stores	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Fwd and Perforated metal over fibrous insulation (Fibreglass-type). Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Comments	N/A							

Deck 0 Baseline					Electrician's Workshop		
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	New non-asbestos pipe insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Pipe lagging	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good-Fair	Friable	A	Good: 7Fair: 5/6	 Showing location of pipe insulation removed by glove bag.
Deck	Checker plate metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						

Deck 0 Baseline							Control Room	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Bulkhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Lagging	New non-asbestos pipe insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Pipe lagging	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good-Fair	Friable	A	Good: 7 Fair: 5/6		
Deck	Textile and plastic moulding over fibrous insulation (navy board system).	No suspect asbestos.	N/A	N/A	N/A	N/A		
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A		
Comments	Asbestos containing pipe insulation was removed by LGF Environmental on May 31 st 2012.							

Deck 0 Baseline								Winch Compartment	
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph		
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A			
Bulkhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A			
Lagging	Pipe lagging	Pipe lagging contains asbestos based on sample results: <ul style="list-style-type: none">collected by PHHcollected by PEC	Good-Fair	Friable	A	Good: 7Fair: 5/6	N/A		
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.		
Other	Winch break bands	No suspect asbestos.	N/A	N/A	N/A	N/A			
Comments	* Asbestos break bands were replaced with non-asbestos bands in June 2015, as per Client and United Engineering document.								

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July 2017

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Appendices

Appendix A: Evaluation of Asbestos Containing Materials (ACMs)

Evaluation of asbestos containing materials is based on the condition of the material and its accessibility. Following are the guidelines used to evaluate ACMs and the action, if any, required to safely manage them.

Spray Applied Fireproofing, Insulation and Texture Finishes

In evaluating the condition of ACM spray applied as fireproofing, thermal insulation or texture, decorative or acoustic finishes, the following criteria apply:

GOOD	Surface of material shows no significant signs of damage, deterioration or delamination. Up to one percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the assessor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes un-encapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.
POOR	Sprayed materials show signs of damage, delamination or deterioration. More than one percent damage to surface of ACM spray.

Mechanical Insulation

In evaluating the condition of mechanical insulation (on boilers, breeching, ductwork, piping, tanks, equipment etc.) the following criteria are used:

GOOD	Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.
FAIR	Minor penetration damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.
POOR	Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

Non-Friable and Potentially Friable Materials

Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos Concrete products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material will be treated as a friable product.

Accessibility

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

Access (A)	Areas of the building within reach (from floor level) of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level.
Access (B)	Frequently entered maintenance areas within reach of maintenance staff, without need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.
Access (C) Exposed	Areas of the building above 8'0" where use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.
Access (C) Concealed	Areas of the building which require removal of a building component including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces etc. Observations are limited to the extent visible from the access points.
Access (D)	Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc., where demolition or the ceiling, wall or equipment etc., is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the assessor's ability to visually examine the materials in Access D.

Action Matrix

The Action Matrix determines what, if any, action is required to safely manage ACMs:

	Condition			
Access	Good	Fair	Poor	Debris
(A)	ACTION 5/7	ACTION 5/6	ACTION 3	ACTION 1
(B)	ACTION 7	ACTION 6/5	ACTION 3	ACTION 1
(C) Exposed	ACTION 7	ACTION 6	ACTION 4	ACTION 2
(C) Concealed	ACTION 7	ACTION 7	ACTION 4	ACTION 2
(D)	ACTION 7	ACTION 7	ACTION 7	ACTION 7

Action Table

Following is a description of the action required to manage ACMs, based on the outcome of the evaluation:

Action 1	Immediate Clean Up of Debris That is Likely to be Disturbed Restrict access that is likely to cause a disturbance of the ACM DEBRIS and clean up ACM DEBRIS immediately. Utilize correct asbestos procedures. This action is required for compliance with regulatory requirements.
Action 2	Entry Into Areas with ACM Debris At locations where ACM DEBRIS can be isolated in lieu of removal or clean up, use appropriate means to limit entry to the area. Restrict access to the area to persons utilizing Type 2 asbestos-work precautions. The precautions will be required until the ACM DEBRIS has been cleaned up, and the source of the DEBRIS has been stabilized or removed.
Action 3	ACM Removal Required for Compliance Remove ACM for compliance with regulatory requirements. Utilize asbestos procedures appropriate to the scope of the removal work.
Action 4	Access into Areas Where ACM is Present and Likely to be Disturbed by Access Use asbestos precautions when entry or access into an area likely to disturb the ACM. ACTION 4 must be used until the ACM is removed (Use ACTION 1 or 2 if DEBRIS is present).
Action 5	Proactive ACM Removal Remove ACM in lieu of repair, or at locations where the presence of asbestos in GOOD condition is not desirable.
Action 6	ACM Repair Repair ACM found in FAIR condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work, treat ACM as material in GOOD condition and implement ACTION 7. If ACM is likely to be damaged or disturbed during normal use of the area or room, implement ACTION 5.
Action 7	Routine Surveillance Institute routine surveillance of the ACM. Trained workers or contractors must use appropriate asbestos precaution during disturbance of the remaining ACM.

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July 2017

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Appendix B: Analytical Results



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Bulk Sample Report

Unit 210 - 2950 Douglas Street
Victoria, B.C. V8T 4N4

Tel: 250-384-9695
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e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Sidney
Contractor: Canadian Coast Guard - Sidney
Project: Bartlett Screed sampling

Date: February 03, 2012
Client Job or PO#: F1782-110781
Project number: 16579

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%
16579-1	Deck 3, Loan Clothing Locker	Jan-31-2012	SD	Other - Deck Screed	Grey cement with grey paint	100	None Detected	0	Cellulose (20%) Non-Fibrous (80%)	100
16579-2	Deck 3, Loan Clothing Locker	Jan-31-2012	SD	Other - Deck Screed	Grey cement with grey paint	100	None Detected	0	Cellulose (30%) Non-Fibrous (70%)	100
16579-3	Deck 3, Loan Clothing Locker, Under Deck Screed	Jan-31-2012	SD	Other - Insulation?	Light brown fibres	100	Amosite	10	Glass (85%) Non-Fibrous (5%)	90

Note: Samples were analyzed by method: EPA/600/R-93/116" Bulk Asbestos Analysis by Polarized Light Microscopy". For heterogenous materials the concentration may vary.
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Asbestos
Testing Program, LLC



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Victoria, B.C. V8T 4N4
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Bulk Sample Report

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: Deck Screed Ships Office
Date: June 06, 2012
Client Job or PO#:
Project number: 17679

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%
17679-1	Ships Office	Jun-06-2012	SD	Other - Deck Screed with Carpet Mastic	Black cementitious with gold adhesive	100	None Detected	0	Cellulose (1%) Non-Fibrous (99%)	100
17679-2	Ships Office	Jun-06-2012	SD	Other - Deck Screed	Black cementitious	100	None Detected	0	Non-Fibrous	100



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Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Sidney
Contractor: Canadian Coast Guard - Sidney
Project: CCGS Bartlett Bulk Sampling

Date: July 28, 2017
Client Job or PO#: F1782-150079
Project number: 25017

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
25017-1b	Winch Compartment - Main Derrick Winch	Apr-20-2015	LR	Brake Band	Black/Grey	100	Chrysotile	10	Synthetic (25%) Non-Fibrous (65%)	90	
25017-2b	Fore'sle Deck - SB Windlass	Apr-20-2015	LR	Brake Band	Brown	100	Chrysotile	10	Synthetic (25%) Non-Fibrous (65%)	90	
25017-3b	Auxiliary Machinery Space - SB Propulsion Shaft	Apr-20-2015	LR	Brake Band	Brown/Gold	100	Chrysotile	20	Synthetic (15%) Non-Fibrous (65%)	80	



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Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Sidney

Contractor: Canadian Coast Guard - Sidney

Project: CCGS Bartlett 2015 - Asbestos Inventory Update

Date: July 28, 2017

Client Job or PO#:

Project number: 25366

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
25366-1b	Derrick Whip Winch Motor	Jun-19-2015	DM	Brake	Green	100	None Detected	0	Synthetic (4%) Glass (4%) Non-Fibrous (92%)	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 - Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - 1 RUSH BULK ASBESTOS

Date: July 28, 2017
Client Job or PO#:
Project number: 25637

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
25637-1b	CCGS Bartlett	Jun-12-2015	LR	Pipe Transit	Red/Black	100	None Detected	0	Synthetic (10%) Non-Fibrous (90%)	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 - Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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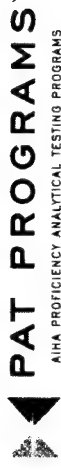
201 - 415 Gorge Road East
Victoria, BC V8T 2W1
Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Sidney
Contractor: Canadian Coast Guard - Sidney
Project: CCGS Bartlett - Pipe Insulation Sampling

Date: July 28, 2017
Client Job or PO#:
Project number: 28534

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
28534-1b	Engine Room Entrance	Feb-22-2016	LR	Penetration Insulation - Applied to Bulkhead	Light Yellow/ Grey	100	None Detected	0	Mineral Fibre (99.5%) Non-Fibrous (0.5%)	100	



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Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Sidney

Contractor: Canadian Coast Guard - Sidney

Project: CCGS Bardlett - Asbestos Inventory 2017

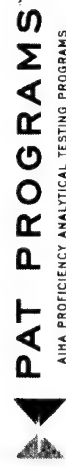
Date: June 09, 2017

Client Job or PO#: F1782-170008

Project number: 32927

Sample No	Location	Date Analysed	Analyst	Client Description	Phase	%	Asbestos	%	Other Materials	%	Comments
32927-1b Layer 1	Chief Engineer (B-6)	Jun-09-2017	BR	Floor Tile - Tan	Adhesive - Tan	10	None Detected	0	Non-Fibrous	100	
32927-1b Layer 2	Chief Engineer (B-6)	Jun-09-2017	BR	Floor Tile - Tan	Floor Tile - Grey	80	Chrysotile	1	Non-Fibrous	99	
32927-1b Layer 3	Chief Engineer (B-6)	Jun-09-2017	BR	Floor Tile - Tan	Mastic - Black	10	Chrysotile	0.5	Non-Fibrous	99.5	

Note: Samples were analyzed by method: EPA/600/R-93/116" Bulk Asbestos Analysis by Polarized Light Microscopy".
For heterogeneous materials the concentration may vary. No reproduction without permission.



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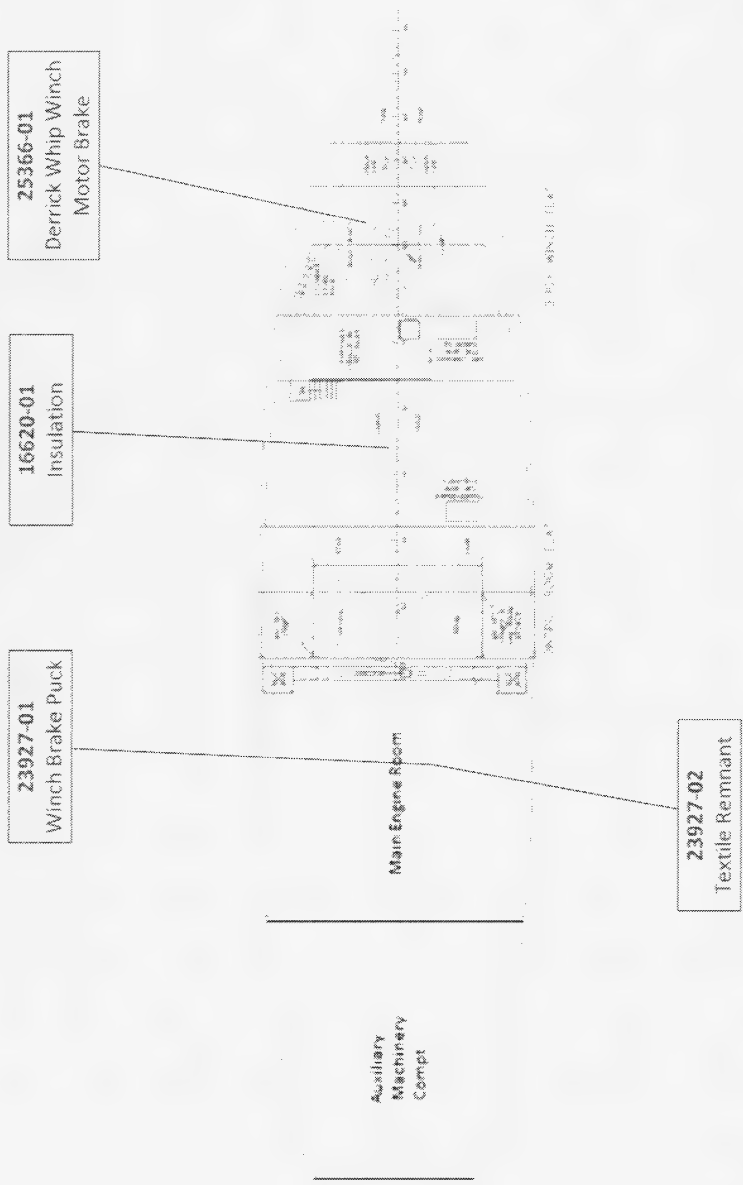
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Appendix C: Sample Locations

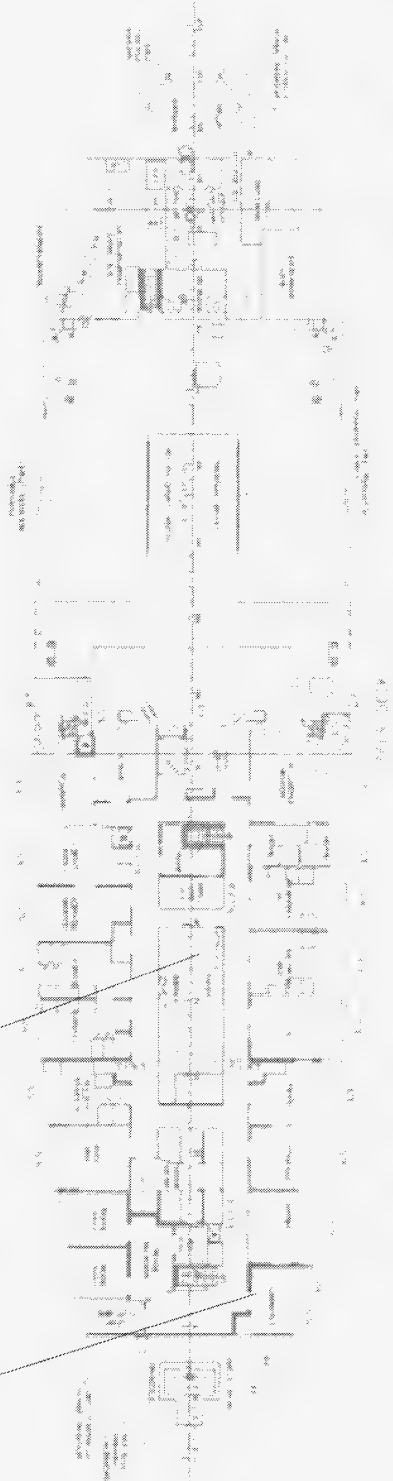








Drawing Not to Scale			
<div><div><div>123</div><div>No Asbestos Detected</div></div><div><div><div>123</div><div>Material Contains Asbestos</div></div><div><div><div>123</div><div>Lead (Pb) Sample (Bolded concentrations indicate concentrations of Pb above the regulatory limit)</div></div></div></div><div><div><div>123</div><div>No Asbestos Detected</div></div><div><div><div>123</div><div>Material Contains Asbestos</div></div><div><div><div>123</div><div>Lead (Pb) Sample (Bolded concentrations indicate concentrations of Pb above the regulatory limit)</div></div></div></div></div></div>		<div><div><div><div><div>North West Environmental Group Ltd.</div></div><div>#201 – 415 Gorge Road East Victoria, BC V8T 2W1</div></div><div><div>PROJECT NO.: 32927</div><div>DATE: June 26, 2017</div><div>SURVEYED BY: BS</div><div>DRAWING NO.: 001</div></div></div></div>	

20151-01
Fire Door Insulation

28534-1
Penetration Insulation on Bulkhead

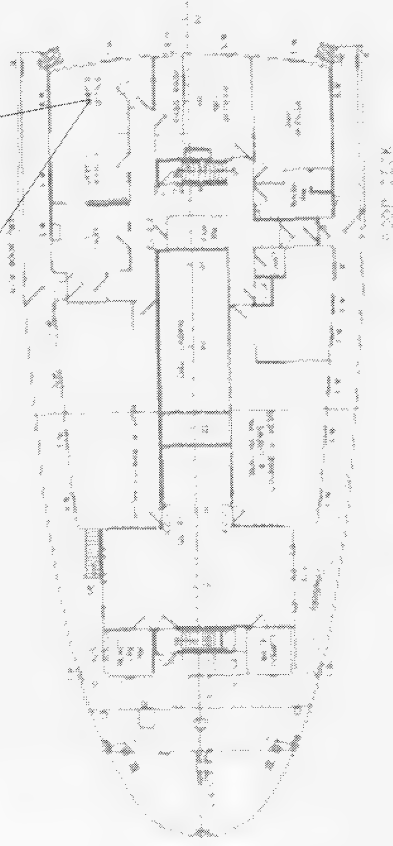


Drawing Not to Scale

Sample Result Key		ADDRESS/LOCATION:	PROJECT NO.: 32927 DATE: June 26, 2017 SURVEYED BY: BS DRAWING NO.: 002	 North West Environmental Group Ltd. #201 - 415 Gorge Road East Victoria, BC V8T 2W1
 123	No Asbestos Detected			
 123	Material Contains Asbestos	CCGS Bartlett		
 123	Lead (Pb) Sample (Bolded concentrations indicate concentrations of Pb above the regulatory limit)	DRAWING TITLE: Deck 1 Sample Locations		

17679-01
Deck Screed with Carpet Mastic

17679-02
Deck Screed



Drawing Not to Scale

Sample Result Key

☐ 123 No Asbestos Detected

☐ 123 Material Contains Asbestos

☐ 123 Lead (Pb) Sample (Bolded concentrations indicate concentrations of Pb above the regulatory limit)

ADDRESS/LOCATION:

CCGS Bartlett

DRAWING TITLE:

Deck 2 Sample Locations

PROJECT NO.: 32927

DATE: June 26, 2017

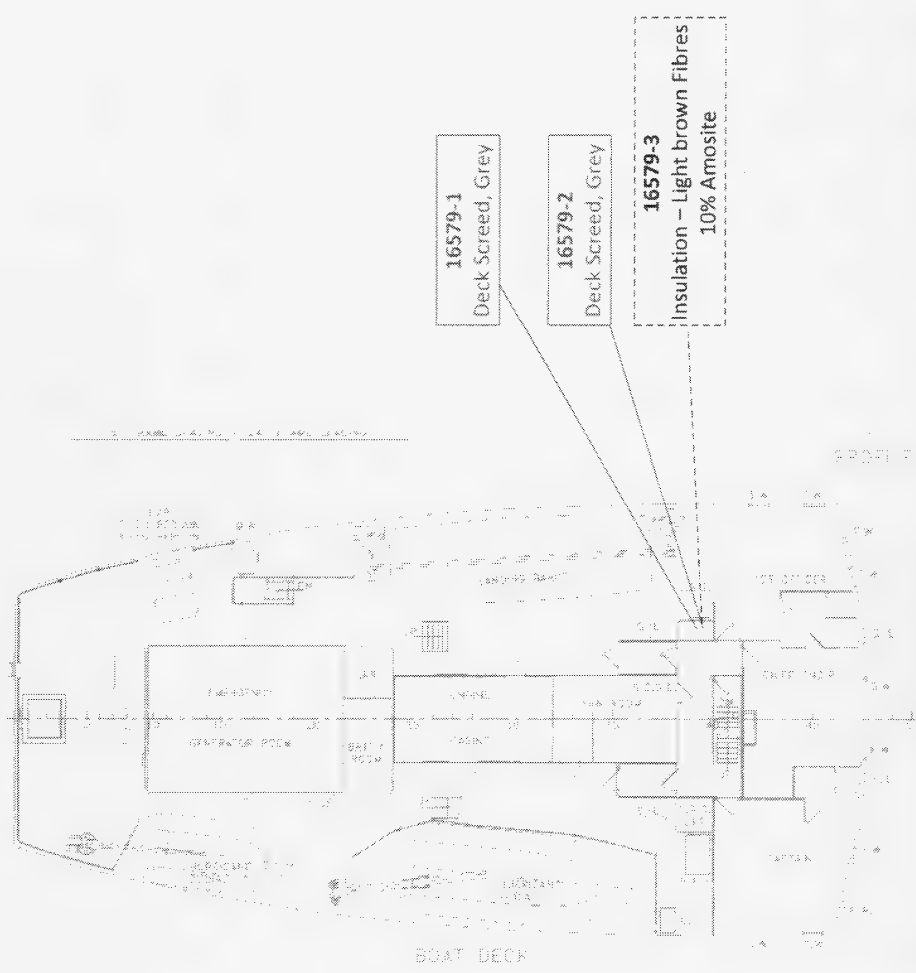
SURVEYED BY: BS

DRAWING NO.: 003




**North West
Environmental Group Ltd.**

#201 - 415 Gorge Road East
Victoria, BC V8T 2W1



Drawing Not to Scale

<p>Sample Result Key</p> <div> <div>123</div> <div>No Asbestos Detected</div> </div> <div> <div>123</div> <div>Material Contains Asbestos</div> </div> <div> <div>123</div> <div>Lead (Pb) Sample (Bolded concentrations indicate concentrations of Pb above the regulatory limit)</div> </div>	<p>ADDRESS/LOCATION: CCGS Bartlett</p> <p>DRAWING TITLE: Boat Deck Sample Locations</p>	<p>PROJECT NO.: 32927</p> <p>DATE: June 26, 2017</p> <p>SURVEYED BY: BS</p> <p>DRAWING NO.: 004</p>	<div>  <div> <p>North West Environmental Group Ltd.</p> <p>#201 - 415 Gorge Road East Victoria, BC V8T 2W1</p> </div> </div>
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Canadian Coast Guard
July 2017

SEE GENERAL NOTES

CCGS Bartlett
Asbestos Condition Report

End of report. This page intentionally left blank.



North West
Environmental Group Ltd.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: September 17, 2017 9:05 AM
To: McMillan Cody
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer
Subject: FW: Refit contract spec review - Painting Hold & Winch Room
Attachments: Alongside Refit B Spec Ver. 1.0.docx
Importance: High

Hey Cody,

The Winch Room prep & paint job is a huge job, especially when you include 3 days at each end of Refit for de-rigging & rigging, and another 2 days on each end for de-storing & re-storing, (metal stock, tons of shackles, lubes, ropes, etc). Losing 10 days for these jobs leave approx 3 weeks for what is still a huge job.

Presumably, in your discussions with Red Crew on this matter, you've been informed that steelwork replacement will be required on the wire leads trunking, (especially stb'd). And considering that is only what is obvious, we should expect some growth work. It's looking like we'd save time to derig the derrick completely prior to prep & painting, but I'll leave that for Deck Dept to work out.

Should you be stating that all steel replacement will be by 1379, or is that overstating the obvious?

Additionally, the 2017 Insulation Report indicates that there is pipe lagging in the Winchroom that contains friable asbestos.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: September-16-17 4:58 PM
To: McMillan Cody
Cc: CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Engineer
Subject: FW: Refit contract spec review - Painting Hold & Winch Room
Importance: High

Hi Cody,

1. Re: Winch Room Painting. Can we state in Spec that the ship's crew shall be given a 3 day window at start of tip to derig some blocks, and a 3 day window at end of refit to re-rig?
2. Re: Cargo Hold Painting. We'd like to cancel this item please (so as not to limit our own access to this compartment – and not cause "interference" with contractor).

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: McMillan, Cody [<mailto:cody.mcmillan@dfo-mpo.gc.ca>]
Sent: September-12-17 1:38 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Refit contract spec review

Hi Ross, here is my spec so far, it's still a bit of a work in progress but I figured I would give you the opportunity to start reviewing the parts I do have done.

I have Contracted out in the spec the following items;

Painting of the wire leads compartment and the hold floor

PME TurboCharger Overhaul

All 6 Main Engine electrically driven pumps

Fuel Oil Transfer Pumps #1 and #2

Bilge and Ballas pump fwd engine room

I have started in there but am thinking of pulling the mess floor resurfacing. I wanted to get your opinion on that, the floor will likely be out of commission for 10 to 14 days, druing a fully crewed refit that may be difficult. Would you still like it done?

Emergency air compressor, I was going to contract to have it sent for overhaul but due to the low hours we should be able to get by with an operational test and oil samples.

The Harbour air compressor can be sent out by ships crew to a service station and doesn't need to be part of the spec. I would have liked to put windlass repairs on this spec but I feel due to the time crunch I won't have enough details on the work required to have it put in.

Everything else can be done on low dollar value contracts and paid on credit card.

Please feel free to mark this up and send it back to me next week. Let me know if there is anything else you would like to see on it and I will get the spec going for it.

Cody McMillan

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering
Fisheries and Oceans Canada / Government of Canada
cody.mcmillan@dfo-mpo.gc.ca / Tel: 250-363-8533

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale
Pêches et Océans Canada / Gouvernement du Canada
cody.mcmillan@dfo-mpo.gc.ca / Tél. : 250-363-8533

CCGS BARTLETT – Alongside refit B

FXXX – XXXXXX

DATES: December 27th 2017 TO January 24th 2018

Prepared by:
*Marine Engineering Western Region
P.O. Box 6000
9860 W. Saanich Rd.
Victoria BC*
V8L 4B2

CCGS BARTLETT - CCGS BARTLETT -

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18.1	*Specification item- Level 2*	5651
19.0	Control Systems *- NOT USED*	5651
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G 1.0 GENERAL NOTES

G 1.1 Vessel Particulars

G 1.1.1 Details

Name:	CCGS Bartlett
Type:	Medium Navais Tender
Class:	Home Trade 1
Year Built:	1969
Principle Dimensions:	
Length:	57.68 m (189 Ft 3 ins)
Breadth, molded:	51.74 m (169 ft 9 ins)
Loaded Draft:	12.95 m (42 Ft 6 ins)
Tonnage, displ:	3.81 m (12.5 Ft)
	1686.8 Long Tons (98% consumables with deck and hold cargo)
Propulsion	2 x Mirrlees Blackstone KLSD M6 6-cylinder, 1565 kW (2100 bhp) total, with 2 C.P. propeller shafts and 1 bow thruster

G 1.1.2 Equipment

Equipment	Make	Model	Serial#

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G 1.2 References

G 1.2.1 Regulations

G 1.2.1.1 The latest edition, at the time of contract signing, of all Acts, regulations, standards, publications, and procedures listed below are to be used as reference. The Contractor will ensure all work completed in the specification are done to all pertinent federal and territorial regulations and standards. CCG procedures are to be used as a guide if no other regulation takes precedence.

FSSM Procedures	Title	Included Yes/No
FSSM	Fleet Safety and Security Manual (Latest Edition)	Yes
Ship Specific	Vessel Specific - Asbestos Risk Assessment Report and Management Plan	Yes
Ship Specific	Vessel Specific – Lead Paint Test Report	No
Publications		
TP 127	Ships Electrical Standards	No
NFPA 306 2014	Standard for the Control of Gas Hazards on Vessels	No
TP 3669	Standards for Navigating Appliances and Equipment	N/A
TP 11469	Guide to Structural Fire Protection	No
TP 14231	Marine Occupational Health and Safety Program	No
TP 14612	Procedures for Approval of Life-saving Appliances and Fire Safety Systems, Equipment and Products	No
TP 4414 E	Guidelines Respecting Helicopter Facilities on Ships.	No
IEEE45	Institute of Electrical and Electronics Engineers, Recommended Practice for Electrical Installations on Shipboard	N/A
70-000-000-EU-JA-001	Specification for the Installation of Shipboard Electronic Equipment	No
IEC 60533	Electrical and Electronic installations in ships – Electromagnetic Compatibility	N/A

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GENERAL NOTES

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IEC 60945	Maritime Navigation and Radio communication equipment and systems – methods of testing and required test results.	No
Publications – Con't	Title	N/A
EPS Report 1/RA/2	Environmental Code of Practice for the Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems - Environment Canada	No
NFPA 10	Standard for portable fire extinguishers	No
18-080-000-SG-003 (formerly DFO/5884 - TP 12445E)	PAINTS AND COATINGS STANDARD	No
Standards	Title	Included Yes/No
CCG	CCG CAD using AutoCAD http://intra.coast-guard.ca/folios/00922/docs/ccgststen.zip	
CCG	CCG Electronic Data standard	
CCG	CCG Trim and Stability Book Production MECTS# 3350860	
CCG	Colour Coding Standard for Piping Systems 30-000-000-ES-TE-001	
CSA W47.1	Certification of Companies for Fusion Welding of Steel Structures Division 2 Certification	
CSA W47.2	Certification of Companies for Fusion Welding of Aluminum	
CSA W59	Welded Steel Construction – Metal Arc Welding	
CSA W59.2	Welded Aluminum Construction	
ISO 9712:2005	International Standards for NDT	
CT-043-EQ-EG-001-E	Welding Specification http://intra.coast-guard.ca/folios/00922/docs/WeldingSpecification-eng.pdf	
SSPC	The Society for Protective Coatings	
ISO 8501-1:2007	Preparation of steel substrates before application of paints and related products	
ISO 10816-1:1995	Mechanical vibration -- Evaluation of machine vibration by measurements on non-rotating parts -- Part 1: General guidelines	
Regulations	Title	Included

GENERAL NOTES

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		Yes/No
MOHS	Maritime Occupational Health and Safety	
CSA	Canada Shipping Act	
Machinery Regs.	Marine Machinery Regulations (SOR/90-264)	
Hull Regs.	HULL INSPECTION REGULATIONS (C.R.C., C. 1432)	
Regulations – Con't	Title	Included Yes/No
Canada Labour Code	Canada Labour Code (R.S.C., 1985, c. L-2)	
Workers' Safety & Compensation Commission work-safe regulation of the province or territory where the work is preformed	http://www.ccohs.ca/oshanswers/information/wcb_canada.html	

G 1.2.2 Guidance Drawings

G 1.2.2.1 The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3	VLE Phase 2 General Arrangement-Profile Sheet	
B10-1372-308	VLE Phase 2-Machinery Arrangement	
1372-51-02	Power System Schematic Drawings - Sheets 2, and 9 of 15	
B10 - 1372 - 51 - 01	VLE Ph2 Power System Schematic Sheet	
B10-22-2	Hatches and Manholes Rev 1	
B10-1372-11	Hull Compartment inspection and test plan	

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GENERAL NOTES

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G 1.2.3 Tanks

G 1.2.3.1 Listed are the tanks found on board, their Location by frame number and capacity (Where available). These are to be used as reference only and will not supersede any specification.

Tank name	Location	Capacity (m ³)
E. Generator Fuel Tank	Fr 11 – 13 Bridge Deck	
Lube Oil Storage Tanks A	Fr 23 – 25 Main Deck	9.91
Lube Oil Storage Tanks B	Fr 23 – 25 Main Deck	8.49
Lube Oil Storage Tanks C	Fr 23 – 25 Main Deck	8.49
Day Fuel Tank	Fr 36.5 – 38 Main Deck	5.09
Flume Stabilization Tank	Fr 51 – 56 below deck	99.13
Aft Peak W.B. Tank	Fr -0 - 4	45.98
Stern tube Compartment Void	Fr 4 - 13	N/A
DB Fuel Tank No. 3 (void)	Fr 13 - 26	
Sea Box Starboard	Fr 25 - 26	N/A
DB Fuel Tank No. 2 Port	Fr 26 - 44	45.43
DB Fuel Tank No. 2 Starboard	Fr 26 - 44	43.83
Sea Boxes (port & starboard)	Fr 43 - 45	N/A
Sea Bay Across	Fr 44 - 45	
Clean Fuel Tank Port	Fr 46 – 51	10.98

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GENERAL NOTES

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Clean Fuel Tank Starboard	Fr 46 - 51	10.98
Oil Fuel Bunker Port	Fr 46 - 51	22.06
Oil Fuel Bunker Starboard	Fr 46 - 51	22.06
Dump Tank Port	Fr 51 - 56	29.62
Dump Tank Starboard	Fr 51 - 56	29.62
Drainwell Port	Fr 56 - 57	N/A
Drainwell Starboard	Fr 56 - 57	N/A
DB Fuel Tank No. 1 Port	Fr 56 - 71	51.03
DB Fuel Tank No. 1 Starboard	Fr 56 - 71	51.03
Cofferdam	Fr 71 - 72	
FW Tank Port	Fr 72 - 80	26.20
FW Tank Starboard	Fr 72 - 80	26.20
Bow Thruster Compartment	Fr 80 - 87	N/A
Chain Locker	Fr 87 - 92	N/A
Fore Peak Water Ballast Tank	Fr 92 - 102	39.81

G 1.2.4 Abbreviations add/remove as required, if new, add to General Notes Standard Clauses

ACM: Asbestos Containing Material	MCA: Matériaux contenant de l'amiante
CFM: Contractor Furnished Material and/or Equipment	MFE: Materials Provided by Contractor
CLC: Canada Labour Code	CCT: Code canadien du travail
CSA: Canadian Standards Association	CSA: Association canadienne de normalisation - ACNOR
CWB: Canadian Welding Bureau	BCS: Bureau canadien du soudage
DFO/CCG: Department of Fisheries and Oceans, Canadian Coast Guard	MPO/ GCC: Ministère des Pêches et des Océans, Garde côtière canadienne
FSR: Manufacturer's Field Service Representative	RSF: Représentant de service du fabricant
FSSM: Fleet Safety and Security Manual	MSSF: Fleet Safety and Security Manual
GSM: Government Supplied Material and/or Equipment	MFG: Matériel fourni par le Gouvernement

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HC: Health Canada	SC: Santé Canada
IEEE: The Institute of Electrical & Electronic Engineers Inc.	IEEE: Institute of Electrical and Electronic Engineers
MSDS: Material Safety Data Sheet	FS: Fiche signalétique
NDT: Non Destructive Testing	END: Essais non destructifs
OEM: Original Equipment Manufacturer	FEO: Fabricant d'équipement d'origine
OHS: Occupational Health and Safety	SST: Santé et sécurité au travail
PWGSC: Public Works and Government Services Canada	TPSGC: Travaux publics et Services gouvernementaux Canada
RO: Recognized Organization as defined by Canada Shipping Act.	OR: organismes reconnus par la Loi sur la marine marchande du Canada
SSMS: Safety and Security Management System	SGSS: Système de gestion de la sécurité et de la sûreté
TBS: Treasury Board of Canada Secretariat	SCT: Secrétariat du Conseil du Trésor du Canada
TA: Technical Authority -CCG Superintendent, Marine Engineering Western Region, or her delegated Representative.	AT: Autorité technique - Représentant du propriétaire (GCC)
TCMS: Transport Canada Marine Safety	SMTC: Sécurité Maritime de Transports Canada
TI: Technical Inspector - CCG delegated.	AI: Autorité de l'Inspection - Inspecteur technique (GCC)
VCS: Vessel Condition Survey	DCC: Demande de Changement de Configuration
VLE: Vessel Life Extension	PVN: Prolongement de vie d'un navire
WCB: Workers' Compensation Board	CNESST: Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST)
WHMIS Workplace Hazardous Materials Information System	SIMDUT: Système d'information sur les matières dangereuses utilisées au travail

G 1.3 Conditions and Definitions

G 1.3.1 The following conditions and definitions are applicable to all work contained in the Specifications and are intended to outline the quality of workmanship and practice that is the minimum acceptable level:

- a) the word "install" means that the Contractor must connect mechanically and electrically and provide the labour and materiel to complete the installation;
- b) the word "reinstall" means a piece of equipment that the Contractor has effected repairs on and is to be returned/installed in its original location and be mechanically and electrically connected. The Contractor must provide the labour and materiel to complete the reinstallation;

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GENERAL NOTES

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- c) the word "remove" means that the Contractor must provide all labour and materiel to remove the unit, equipment, materiel, or system in its entirety. Part of the removal process is to blank openings, restore insulation and paint;
- d) the word "relocate" means that the Contractor must provide all labour and material to remove the unit, piece of equipment, or system and to install the same unit, piece of equipment, or system in the new location;
- e) the term "or equivalent" means a substitute which has equal characteristics i.e. (size, materiel type, life, weight, input, and output) as approved by the TA. A comparison of the general specifications must be provided to the TA for the equipment specified and the "or equivalent" (i.e. old compared to the new);
- f) the term "overhaul" as applied to any mechanical equipment, structure or system comprises: disassembly into component parts; cleaning examination of parts for defects; gauging of parts for wear; reporting of parts worn beyond specification limits or otherwise defective and reassembly followed by specification adjustments; tests; and functional trials;
- g) the word "disconnect" means the Contractor must mechanically and electrically disconnect the piece of equipment of all piping, wiring, seatings and other attachments permitting the removal of the unit as a whole;
- h) the word "disassemble" means that the Contractor must provide all labour to take apart, piece by piece, the equipment, machinery or system to be examined or repaired;
- i) the word "reassemble" means that the Contractor must provide all labour and material to put together, piece by piece, the equipment, machinery or system on completion of examination or repair;
- j) the words "Additional Work Procedures" means the procedures as defined in ANNEX G - PROCEDURE FOR PROCESSING UNSCHEDULED WORK and includes any additional work required on a system, sub-system or equipment which the original specification did not specify;
- k) the word "calibrate" means the adjustment of readings and measurements to a known standard;

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- l) the word "check" means that the Contractor must provide labour to find faults by sighting, feeling or listening. The checking of any equipment does not involve the disturbance or removal of parts, components or sub-assemblies;
- m) the word "examine" means that the Contractor must provide labour for the process of systematically examining, checking and testing equipment, records or administrative procedures to detect actual or potential defects or errors;
- n) the word "test" means that the Contractor must provide labour to conduct the operation of a unit in relation to a stated standard or procedure;
- o) the words "set-to-work" means the tuning, alignment and adjustment of equipment/systems required subsequent to satisfactory installation. Inspection to make the equipment/systems ready for technical acceptance trials;
- p) the word "trials" is an element of QA that means an action(s) by which the Contractor proves by a visual or instrumental presentation that the equipment or system satisfies the requirements of the specified trials agenda; and
- q) the term "functional test" means operation of a piece of equipment in all its normal operating modes and throughout its operating range to establish that it will perform its designed function within normal operating parameters as indicated in the manufacturer's documentation.

G 1.4 Miscellaneous Provisions

G 1.4.1 Occupational Health and Safety

G 1.4.1.1 The Contractor and all sub-contractors must follow Occupational Health and Safety (OHS) procedures in accordance with applicable federal and provincial OHS regulations ensuring that Contractor activities are carried out in a safe manner and do not endanger the safety of any personnel.

G 1.4.1.2 Where "Safety Management System" is referenced in this document, it is referring to the Contractor's Safety Management System, which must be in affect while in the Contractor's Care and Custody and must be in accordance with the applicable OHS regulations and procedures.

- a) The Contractor must, for all work on Canadian Coast Guard Vessel, meet or exceed the Safety Management System defiend in the FSSM unless a

CCGS Bartlett

GENERAL NOTES

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Contractor proposed comprehensive Safety Management System is presented and accepted by the TA.

G 1.4.1.3 When the Contractor works on the vessel while in the Care and Custody of the Canadian Coast Guard, the Safety Management System of CCG must be followed:

- a) Contractor and all its representatives must attend an orientation session on vessel safety before beginning any work to familiarize the Contractor's employees with the dangers specific to the vessel and with its permit systems for work protocols as well as with the procedures for safety, risk prevention, hazard response and pre-work safety assessments. The Contractor will have access to an uncontrolled copy of the Fleet Safety and Security Manual.
- b) The Contractor must comply with the Fleet Safety and Security Manual, DFO/5737, as well as with the instructions for working on board the vessel, in addition to the relevant requirements of the Canada Labour Code during performance of the following types of work:
 - i) Work at heights;
 - ii) Entry into enclosed spaces;
 - iii) Degassing before entering into confined spaces and for hot work;
 - iv) Lockout and Tagout;
 - v) Pre-work safety assessments.
- c) Contractor and its representatives must attend an orientation session on Vessel Safety before beginning any work to familiarize the Contractor's employees with the dangers specific to the vessel and with its permit systems for work protocols. During this session CCG will review the procedures for safety, risk prevention, hazard response and pre-work safety assessments. The Contractor will have access to an uncontrolled copy of the Fleet Safety and Security Manual.
- d) For the purpose of the Lockout and identification procedure, the Contractor must provide the padlocks and locking devices for the Contractor's employees in addition to those provided by the Chief Engineer for the vessel's crew.
- e) The Contractor must adhere to local facilities shore based safety instructions and safety procedures.

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GENERAL NOTES

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G 1.4.1.4 The Contractor must identify a specified person that is responsible for the safety management of the work site. The Safety Manager must insure that daily safety rounds are carried out and that safety issues are identified and safety precautions are maintained.

G 1.4.1.5 Areas that pose a hazard as a result of the specification work are to be secured and clearly identified by the Contractor with signage to advise and protect all personnel from the hazard in accordance with applicable regulations.

G 1.4.2 Lead Paint and Paint Coatings

G 1.4.2.1 The Contractor must not use lead based paints.

G 1.4.2.2 CCG ships have been painted with lead based paints in the past and as a result some of the Contractor's processes such as grinding, welding and burning may release this lead from the coatings. Canadian Coast Guard will provide copies of all available lead testing results.

G 1.4.3 Touch-up / Disturbed Paint

G 1.4.3.1 The Contractor, at a minimum, must repair coating systems disturbed as a result of the specified work. Coating systems must be in accordance with the coating system of the vessel, and be applied in accordance with the paint manufacturer's recommended procedures.

G 1.4.3.2 *Enter applicable clauses from General Notes – Standard Clauses*

G 1.4.4 Asbestos Containing Materials (ACM)

G 1.4.4.1 The Contractor must use insulation that contains 0% ACM.

G 1.4.4.2 The Contractor will be supplied the most recent Asbestos Risk Assessment Report and Asbestos Management Plan by CCG.

G 1.4.4.3 Handling of any asbestos containing materials must be performed by trained personnel and/or a company certified in the removal of asbestos in accordance with Federal, Provincial/Territorial and Municipal regulations.

G 1.4.4.4 The Contractor must provide the TA with disposal certificates for all asbestos containing material removed from the vessel indicating that the disposal was in accordance with Federal, Provincial and Municipal regulations in effect.

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G 1.4.4.5 The Contractor must provide an "Observation Report (OR)" with reference to any concerns or intentions in regards to asbestos containing materials not already specified. The Contractor is to identify any materials that are suspected to contain asbestos prior to any work being completed. Any approved work resulting from the OR will follow the Additional Work Procedures.

G 1.4.5 Confined Spaces

G 1.4.5.1 Entry into any confined space onboard the vessel during the contract period must be conducted in accordance with the safety management system as determined in the Pre-Work Meeting. In addition to those requirements, the Contractor must also conduct the following:

- a) Have a qualified person issues a "Gas Free Certificate" for spaces that will be entered and post the certificate outside the entrance to the space. Certificates must specify, "Safe for persons" or "safe for hot work" as appropriate.
- b) Provide copies of all certificates generated to the TA in accordance with the Documentation section of the General Notes.

G 1.4.6 Hot Work

G 1.4.6.1 All hot work conducted during the contract must be in accordance with the Safety Management System. In addition to the requirements of the Safety Management System the Contractor must as a minimum also:

- a) Certify confined spaces affected by hot work as "safe for hot work" in accordance with the Confined Spaces section of the General Notes.
- b) Remove all portable combustible materials from the vicinity, to a safe distance not less than two meters away;
- c) Supply and install protective material to prevent the spread of sparks, protect electrical cables and other services;
- d) Supply and post fire sentries in each space and in the adjacent space where welding, grinding, or burning is being carried out on bulkheads, deckheads or decks;
- e) Supply and provide appropriate fire extinguisher(s) to the fire sentries and ensure each sentry is trained in the extinguisher's use. The fire sentry must maintain a watch in his designated area for a minimum of thirty (30) minutes

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after any hot work has been completed. The Contractor must record the sentry attendance time on all hot work permits indicating when hot work stopped, and time sentry left post;

- f) Provide a copy of the site generated hot work permits to the TA in accordance with the Documentation section of the General Notes; Named in accordance with the specification item generating the required work.

G 1.4.7 Work Aloft

- G 1.4.7.1 Any work aloft onboard the vessel during the maintenance/refit period must be conducted in accordance with the Safety Management System. Notices must be placed to prevent operation of Radars while personnel are working aloft on the mast or on the wheelhouse top.

G 1.4.8 Electrical Equipment

- G 1.4.8.1 When working on electrically operated equipment, the Contractor must lock-out equipment in accordance with the Safety Management System, and as a minimum conduct the following:
 - a) Isolate the main power source and any alternative power source to the equipment;
 - b) Install Electrical lock-outs and place electrical caution tags on the main power source and any alternate power sources for the switches/disconnects supplying the equipment under maintenance;
 - c) Verify at the terminals to ensure power is not present.
 - d) Ensure the lock-outs and electrical caution tags remain in place until completion of all work.
- G 1.4.8.2 The TA must be notified of all such ongoing work.
- G 1.4.8.3 All electrical installations and repairs must be done in accordance with the latest revisions of TP127 - Electrical Standards of Transport Canada Marine Safety and of standard 45- Recommended Practice for electrical installation on ships - of the IEEE. Standard TP127 takes precedence over the IEEE standard.

G 1.4.9 Workplace Hazardous Materials Information System (WHIMS)

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G 1.4.9.1 The Contractor must provide the TA with Material Safety Data Sheets (MSDS) for all Contractor and sub-contractor supplied WHIMS controlled products. MSDS sheets are to be the formats requested in the Documentation section of the General Notes.

G 1.4.9.2 All MSDS sheets must be maintained in accordance with OHS procedures.

G 1.4.9.3 The TA will provide the Contractor with access to MSDS sheets for all controlled products on the ship for all specified work items on request.

G 1.4.10 Smoking in the Work Space

G 1.4.10.1 The Contractor must ensure compliance with the Non-Smokers' Health Act. The Contractor must ensure that there is absolutely no smoking onboard the vessel by their employees, sub-contractors, including the employees of any sub-contractor.

G 1.4.11 Contractor Furnished Materials (CFM) and Tools

G 1.4.11.1 The Contractor must ensure replacement material such as jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings etc. are in accordance with the equipment manufacturer's drawings, manuals and/or instructions.

G 1.4.11.2 Where no particular item is specified or where substitution must be made, the Contractor must submit an Observation Report indicating the substitution or item not specified to the TA. The Contractor must provide information about materials used, certificate of grade and quality of various materials to the TA prior to use.

G 1.4.11.3 The Contractor must provide all equipment, devices, tools and machinery such as craneage, staging, scaffolding, hoarding, and rigging necessary for the completion of the work in this specification.

G 1.4.11.4 The Contractor must deliver and store all new CFM equipment at their facility. The CFM must be stored in a secure, environmentally controlled space in accordance with the equipment storage section of this specification.

G 1.4.11.5 All tools are Contractor supplied unless otherwise stated in the technical specifications.

G 1.4.12 Government Supplied Materials (GSM) & Tools

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G 1.4.12.1 Where tools are supplied by the TA they must be returned by the Contractor in the same condition as when they were borrowed. Borrowed tools must be inventoried and signed for by the Contractor on receipt and return to the TA.

G 1.4.12.2 Any GSM not specifically stated in the Technical Specification must be received by the Contractor and stored in accordance with the Equipment Storage section of this specification. These activities are to be covered by the Procedures for Design Change or Additional Work. (PWGSC 1379).

G 1.4.13 Storage

G 1.4.13.1 Equipment (i.e. covers, cowling and other items that may need to be removed and stored) must be stored in accordance with the equipment manufacturer's or equipment vendor's specific storage instructions. The Contractor must make these instructions available to the TA.

G 1.4.13.2 All equipment and items must be stored in such a manner so as to be easily accessible for inspection. No items are to be stored directly on floors.

G 1.4.14 Regulatory Inspections and/or Class Surveys

G 1.4.14.1 *Enter applicable clauses from General Notes – Standard Clauses*

G 1.4.15 Contractor Inspections

G 1.4.15.1 The Contractor must afford the opportunity for the TA to conduct an inspection with the contractor on the condition and location of items to be removed prior to either carrying out the specified work or gaining access to a location to carry out the work.

G 1.4.15.2 The Contractor must take a before picture of conditions prior to removing any items. These photographs are to be in accordance with the Documentation section of the General Notes, named according to the specification section that resulted in removing those items.

G 1.4.15.3 Prior to the close out of any item under this specification, the Contractor must afford the TA the opportunity to verify the work has been completed in accordance with the specification. At that time the Contractor must have available all photographs, documents, reports, and trials in relation to the item being closed out as completed.

G 1.4.16 Recording of Work in Progress

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G 1.4.16.1 The TA may record any work in progress using various means including, but not limited to, photography and video, digital or film.

G 1.4.17 Access for Maintenance, Installation, and Removal.

G 1.4.17.1 *Enter applicable clauses from General Notes – Standard Clauses*

G 1.4.18 Assembly of Components

G 1.4.18.1 The Contractor must ensure that during installation of specified equipment, that parts and assembled equipment are cleaned of smudges, spatter or excess solder, weld metal and metal chips or any other foreign material which might detract from the intended operation, function, or appearance of the equipment. (This would include any particles that could loosen or become dislodged during the normal expected life of the equipment). All corrosive material must be removed. This cleaning must take place before the parts are assembled into the equipment.

G 1.4.18.2 Covers, cowlings and components damaged by the Contractor must be replaced with a new CFM cover, cowling, or component.

G 1.4.18.3 Where torque specifications are not provided by the manufacturer, the applicable SAE, ANSI, or BS1083 nut and bolt standard torque must be used.

G 1.4.19 Protection of Equipment

G 1.4.19.1 The Contractor must take measures to ensure that surfaces and components of equipment installed on the vessel are protected against damage, soiling, and contamination as a result of contracted work.

G 1.4.19.2 All electrical and electronic equipment and components must be protected during the contract against physical damage, internal damage, and by the effects of adverse temperatures or other environmental conditions.

G 1.4.19.3 The Contractor must protect equipment that could be damaged as a result of movement of materials and equipment nearby. The Contractor must also protect equipment from nearby sources of contamination including but not limited to burning, welding, media (sand) blasting, grinding and painting.

G 1.4.19.4 Any damage to surfaces, equipment, furnishings or decor incurred prior to acceptance must be returned to As-Delivered condition by the Contractor.

G 1.4.19.5 All openings in machinery and/or systems prior to connections being made must be kept covered by fitted secure solid inserts or covers at all times.

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G 1.4.19.6 The Contractor must obtain and follow instructions from its sub-Contractors for any special protection required for their equipment during the project work. Such instructions must be made available to the TA.

G 1.4.19.7 Physical protection including but not limited to plastic sheets, fireproof covers, heavy weight material covers, wood plugs, wood encasements and heaters must be used as required.

G 1.4.19.8 The Contractor must protect the vessel from the possibility of vermin infestation (insect/mammal/bird). If an infestation does occur during the contract period, the Contractor must bear all costs to ensure the vessel is made vermin free before the vessel's departure and contract completion.

G 1.4.20 Halocarbon containing Systems

G 1.4.20.1 All work conducted on Halocarbon containing systems, must be in accordance with the Federal Halocarbon Regulations, 2003 (SOR/2003-289). These regulations are available on the internet here: <http://laws-lois.justice.gc.ca/eng/regulations/SOR-2003-289/page-1.html>

G 1.4.21 Welding

G 1.4.21.1 In addition to section 7.16 Welding Certification – Contract; All welding and weld inspection must be in accordance with the CCG Welding Specification CT-043-eg-001. This document will be provided to the Contractor within 48 hours of written request to the TA.

G 1.4.21.2 The governing standards for welding of materials less than 3 mm in thickness must be in accordance with the requirements of the CCG Welding Specification CT-043-eg-001. For materials greater than 3 mm in thickness, the Contractor must meet the following:

- a) For structural steels greater than 3 mm in thickness, welding must meet the requirements of CSA Standards W47.1 and W59, except as modified by the CCG Welding Specification CT-043-eg-001.
- b) For structural aluminum greater than 3 mm in thickness, welding must meet the requirements of CSA Standards W47.2 and W59.2, except as modified by the CCG Welding Specification CT-043-eg-001.

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- c) For structural stainless steels greater than 3mm in thickness, welding must meet the requirements of CSA Standard W47.1 and AWS D1.6, and of the CCG Welding Specification CT-043-eg-eq-001

G 1.5 Documentation

G 1.5.1 Text Documentation

- G 1.5.1.1 All text deliverables must be accompanied by a PDF file that must contain the complete document. The Contractor must check the quality to verify that the content reflects the same content/formatting as the Master Document file. In the case of changes, a second PDF file that contains only the changed sheets must be supplied.

- G 1.5.1.2 Further guidance is available from the Canadian Coast Guard Specification for Electronic Technical Data Deliverables (CA-014-000-NU-TD-001).

Commented [D1]: Confirm reference is suitable. Appears outdated, and does not provide clear and precise instruction to contractor

G 1.5.2 Data Book

- G 1.5.2.1 The Contractor must provide all documentation generated as a result of specified deliverables, in both electronic and paper formats. There must be 2 paper copies of each document, in two separate binders, as part of the contractors QA program. An electronic copy of all documentation must also be provided to the TA in accordance with the formats described in this specification section.

- G 1.5.2.2 All copies of documents generated as a result of specified deliverables will be referred to as the "Data Book".

- G 1.5.2.3 The Contractor must provide to the TA all the files generated as part of the Data Book prior to the contract being considered complete. The files must be in hard format (CD-ROM, DVD-ROM, Flash Drive / Memory Stick). Each specification item is to have its own folder named according to the specification item. For example "G1.0 General Notes".

- G 1.5.2.4 Any documentation, media, and reports that are the result of Additional Work must be included as part of the Data Book.

G 1.5.3 File Naming

- G 1.5.3.1 File naming must be in the following format: *Specification#.# – Date (yyyy-mm-dd) – File Name Describing Information*. For Example: "G1.0 – 2013-12-01 – Details of file naming.pdf".

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G 1.5.4 E-mails

- G 1.5.4.1 Any files sent to the CA/TA by e-mail must be named as per the "File Naming" section of this specification. All files that are e-mailed must have in the subject name: "Contract# - DATA BOOK - Date - Specification #". For Example: **F1782-XXXXXX - DATA BOOK - 2014-11-30 - G1.0 General Notes**. Files sent by e-mail must also be included in the "Data Book".

G 1.5.5 File Formatting

- G 1.5.5.1 All documentation, reports, test results, certificates, or data obtained by the contractor in paper form must be scanned into unprotected, searchable, Adobe PDF formatted files and named according to the File Naming section of this specification.
- G 1.5.5.2 All reports, test results, certificates, or raw data obtained by the contractor in electronic format must be converted to unprotected Adobe PDF formatted files and named according to the "File Naming" section of this specification. Both the original and the converted copy must be provided as part of the Data Book.

G 1.5.6 Photographs

- G 1.5.6.1 All photographs obtained by the contractor as requested in the specification must be provided in .JPG formatted files at a resolution of at least 640 x 480 and named according to the "File Naming" section of this specification.

G 1.5.7 Measurements, Calibrations, and Readings.

- G 1.5.7.1 All measurements, calibrations and readings recorded, must be signed by the person taking the measurements, dated and scanned into electronic format as part of the Data Book.
- G 1.5.7.2 Unless other wise specified the Contractor must record dimensions to a precision of three significant digits in imperial along with the metric equivalent.
- G 1.5.7.3 The Contractor must provide to the TA current and valid calibration certificates, and control values for all instrumentation used in the Test and Trials Plan, showing that the instruments have been calibrated in accordance with the manufacturer's instructions. These copies are to be provided as part of the Data Book, under any specification where measurements are required,.

G 1.5.8 Test/Inspection Records and Certificates

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- G 1.5.8.1 Test and/or Inspection Records and Certificates are identified as a deliverable in the individual specification item requesting them.
- G 1.5.8.2 Test and/or Inspection Records and Certificates, must be included as a separate section in the Databook and indexed/arranged in numeric order by specification number.
- G 1.5.8.3 The Contractor is responsible for maintaining a complete and accurate record of all tests and trials conducted on the vessel and on each piece of equipment. Prior to the commencement of a trial, all relevant documentation and associated test sheets, including shop test data, must be complete and attached to the trials agenda.
- G 1.5.8.4 All tests and trials data must be legible both in hard copy and electronic format. If necessary, handwritten records may require transcription into electronic format in order to be acceptable. The original must be signed by the regulatory body, the TA, the Contractor and where necessary, by the sub-Contractors and/or FSR's who witnessed the tests. All the data must be submitted to the TA in accordance with the Documentation section of these General Notes.
- G 1.5.8.5 The Contractor must, in addition, provide originals of each certificate document to the TA in an envelope marked with the vessel's name and the works "Original Certificates"

G 1.6 Drawings

- G 1.6.1 This section, to be referred to as the Drawings section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be drawings.
- G 1.6.2 The contractor must have on staff or through a sub-contractor a person qualified and experienced in the use of AutoCAD who will create or modify drawings that result from the work.
- G 1.6.3 The Contractor must comply with the Canadian Coast Guard National CAD Standards titled "Computer Aided Design (CAD) using AUTOCAD" provided.
- G 1.6.4 Drawing disks must be clearly labeled with the Contract Number, file names and drawing numbers. If a complete listing exceeds the label size, a "readme.txt" file in ASCII format must be provided with each disk. A printed copy of the Readme file must accompany each disk. Disks must be labeled As-Fitted drawings for those drawings that have been approved and finalized.

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G 1.6.5 Final As-Fitted prints/plots must not contain markings or corrections by hand (i.e. marker, pen, pencil, etc.). Drawings containing mark-ups must be revised and re-printed/plotted.

G 1.6.6 The Contractor must prepare all the working drawings necessary for the project requirements and modernization work.

G 1.6.7 The Contractor must furnish all drawings required by sub-Contractors, trades and other consultants.

G 1.6.8 Schematic drawings of systems must include all pertinent system information, including sizes, dimensions, labeling, equipment locations, and all information relating to system fittings.

G 1.6.9 The Contractor must have in place a complete system of documenting and controlling all drawing revisions affected by the work of this project. Drawing numbering system and titles must match the original drawings for clarity and include a revision number with date.

G 1.6.10 Guidance Drawings

G 1.6.10.1 All technical guidance drawings are issued to the Contractor for guidance purposes only. The Contractor must develop working drawings and to ensure that all such drawings receive applicable regulatory approval. Not all technical guidance drawings supplied are As-Fitted drawings; therefore the Contractor must physically verify affected items.

G 1.6.10.2 All departures from the provided guidance drawings and project specifications must be clearly indicated by the Contractor and written approval obtained from the TA before carrying out such alterations or departures.

G 1.6.11 As Fitted Drawings *If Referenced*

G 1.6.11.1 The As-Fitted Drawings are identified as a deliverable in the specification item requesting them.

G 1.6.11.2 Upon completion of specified work, the Contractor must transfer the mark-ups from any working drawings where installation changes were made to drawings affected by the project work. These drawings become the As-Fitted drawings for the project work. The Contractor is responsible for providing updated vessel drawings affected by the project work to the TA prior to completion of the contract. The affected drawings must be submitted in the following formats:

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- a) One (1) plotted copies of the latest revision of each of the As-Fitted drawings;
- b) One (1) electronic copies of the latest revision of each As-Fitted drawing.

G 1.6.11.3 Plotted drawings must be on standard ANSI paper sizes.

G 1.6.11.4 Marked up drawings are to be AutoCAD drawings where original AutoCAD drawings are provided. If no AutoCAD drawings were provided then scanned files (raster format) must be supplied to CCG in one of the following formats:

- a) DXF format;
- b) TIFF format;
- c) PDF format.

G 1.7 Manuals

G 1.7.1 This section, to be referred to as the Manuals section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be manuals.

G 1.7.2 **General**

G 1.7.2.1 Instruction Manuals must be individually bound in a hard cover 3 ring book format with a page size of 8 1/2" x 11". Drawings of a larger size must be concertina folded to suit. The covers must have the following information printed thereon:

- a) CCGS Bartlett;
- b) Equipment Identification;
- c) Equipment Manufacturer;
- d) Date.

G 1.7.2.2 Plastic tabbed indices must be provided for all sections of the manuals. Major equipment components must be subdivided into separate sections of the manuals.

G 1.7.2.3 A master index must be provided at the beginning of each binder indicating all items included in each section.

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- G 1.7.2.4 A list of names, addresses and telephone numbers of contacts associated with the equipment manufacturers must be provided that can be used after the project completion for maintenance and information data purposes.
- G 1.7.2.5 A copy of the final reviewed and approved As-Fitted drawing(s) must be provided within the maintenance manual.
- G 1.7.2.6 One (1) electronic copy of each manual must be provided in accordance with the Data Book section of this specification.
- G 1.7.2.7 Two (2) paper copies of manuals and data sheets must be supplied in English for all Contractor Furnished Equipment items.

G 1.7.3 Operation Manuals – As-Fitted

G 1.7.3.1 Operation manuals must include the following items:

- a) General description of equipment operating sequence;
- b) Step by step procedure to follow in commissioning the equipment;
- c) Schematic wiring diagram for the fitted equipment; and
- d) All pertinent equipment performance criteria.

G 1.7.3.2 Where software/hardware systems are fitted, the operation manual must include the full software documentation manual in paper form for the system and an electronic copy in accordance with the Documentation Section. The minimum software documentation must include:

- a) System level diagrams describing the overall scheme of the software/hardware system;
- b) The functional specifications, which must describe in detail the functional capabilities of the system and each software components; and
- c) Project specific program listings including all comments describing the details of the code functions.

G 1.7.4 Maintenance Manuals – As-Fitted

G 1.7.4.1 Maintenance manuals are to include:

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- a) Manufacturer's maintenance instructions for each item of the equipment requiring maintenance activity;
- b) Instructions are to include installation instructions, part numbers, part lists, master drawings and exploded views with part identification for all mechanical, electrical and electronic parts, name of suppliers;
- c) Summary list of each item of the equipment requiring lubrication, indicating the name of the equipment item, location of all points of lubrication, type of lubricant recommended, and frequency of lubrication; and
- d) Troubleshooting sections must be included for all equipment in the maintenance manual under a separate heading.

G 1.7.4.2

G 1.8 Identification

G 1.8.1 Nameplates

- G 1.8.1.1 Nameplates are identified as a deliverable in the individual specification item requesting them.
- G 1.8.1.2 All nameplates must be in English, except where required in English and French by TCM for reasons of emergency operation.
- G 1.8.1.3 Lettering must be clear and concise with the minimum use of abbreviations. Primary information must be given in larger size lettering than secondary information.
- G 1.8.1.4 The type of nameplates must suit the location in the vessel as specified below:
- G 1.8.1.5 Plastic:
 - a) Laminated plastic nameplates, black with white core engraved through to the center core, must be provided for all devices located on the exterior surfaces of switchboards, MCC's, or local control panels. Nameplates must be secured to the equipment with machine screws.
 - b) New nameplates to be fitted on the existing equipment must be consistent in size and lettering with those already fitted or those being replaced.

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- c) Nameplates indicating feeder circuits must identify each circuit by name and number and the fuse size or trip element rating.
- d) The Following Labels must be of laminated plastic, red with white core engraved through to the center core:
 - i) Safe Working Loads,
 - ii) Warning/Caution labels,
 - iii) Circuit Breakers with shunt trips requiring completion of remote circuits prior to being operated,
 - iv) Equipment with multiple power sources,
 - v) Circuit breaks having a potential power source connected to both sides
 - vi) Indication of any other potentially hazardous condition.

G 1.8.1.6 Engraved on Metal:

- a) Must be used in machinery spaces and where exposed to the weather or susceptible to covering by paint, oil or grease. Nameplates exposed to weather must be stainless steel or brass. Engraved metal nameplates must be of stainless steel or brass with lettering accentuated by means of black wax unless otherwise noted, and secured with stainless steel or brass machine screws.
- b) A complete list of nameplates, detailing size of plate, size of lettering and inscription must be submitted to the TA for review prior to ordering and/or manufacturing.

G 1.8.2 Wire Labelling

G 1.8.2.1 Wire Labelling is identified as a deliverable in the individual specification item requesting them.

G 1.8.2.1 All permanently installed cables must be tagged with the circuit designation at all points of connection and on both sides of bulkheads, decks, etc. Tags must be of metal compatible with the armor or cable sheathing. Both ends of the tags must be strapped to the cable with compatible metal strap after all painting has been completed. Straps must pass through holes in the tags so that tags are positively secured. Strap ends must be permanently folded and crimped. Adhesives of any kind will not be acceptable.

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- G 1.8.2.2 All wiring in panels specified to be labelled must be labeled with the Cable Number and their conductor # unless otherwise specified in equipment installation drawings.

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S 1.0 SERVICES

S 1.1 GENERAL

- S 1.1.1** The Contractor must supply the following services to the vessel for the entire work period and disconnect upon completion of the work period.
- S 1.1.2** All staging, craning, screens, lighting, and any other support service, equipment, and material necessary to carry out the work identified in these specifications must be Contractor supplied.

S 1.2 BERTHING

- S 1.2.1** Ship will be Berthed at 25 Huron street and berthing will be conducted by ships crews

S 1.3 MOORING LINES

- S 1.3.1** Mooring lines will be tended to by ships crew

S 1.4 GANGWAYS

- S 1.4.1** Gangways and ship access will be tended to by ships crew

S 1.5 ELECTRICAL POWER

- S 1.5.1** Not used

S 1.6 ACCOMMODATION/MACHINERY AREA DECK PROTECTION

- S 1.6.1** Not Used

S 1.7 HEATING

- S 1.7.1** Not Used

S 1.8 WORKSITE INSPECTIONS

- S 1.8.1** During the work period, the Contractor must maintain their work areas in the vessel in a clean condition, free from debris and remove garbage daily.
- S 1.8.2** Upon completion of the contract, the Contractor must return the vessel to the As-Delivered state of cleanliness.

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S 1.8.3 Prior to the completion of the Acceptance Document, the Contractor's QA Representative, and the TA must perform an inspection of the vessel to view all areas where work was performed by the Contractor.

S 1.8.4 Copies of all photos, documentation, and inspection sign off sheets must be provided in accordance with the Documentation section of the General Notes.

S 1.9 FIRE PROTECTION

S 1.9.1 Not Used

S 1.10 PROJECT FACILITIES

S 1.10.1 Not Used

S 1.11 PORTABLE TOILETS

S 1.11.1 Not Used

S 1.12 CONTRACTOR'S ACCESS TO VESSEL FACILITIES

S 1.12.1 Not Used

S 1.13 SECURITY

S 1.13.1 Not Used

Safety and Security

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10.0 Safety and Security

10.1 SPECIFICATION ITEM- LEVEL 2

10.1.A Identification

10.1.A.1 *Brief Statement of Specification Contents or General Instruction – Level 4*

10.1.B References

10.1.B.1 Equipment Data

10.1.B.1.1 *Equipment Details in statements or a table*

10.1.B.2 Drawings

10.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets

10.1.B.3 Regulations and Standards

10.1.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		

Safety and Security

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Regulations		

10.1.C *Statement of Work*

10.1.C.1 *Statement of work – Main Statement– Level 4*

10.1.C.1.1 *Statement of work – Main Statement– Level 5*

a) *List of Statements – Level 6*

i) *Sub List of items – Level 7*

10.1.C.2 *SOW Section Title* Verify correct number

10.1.C.2.1 *5th Level After Bold* Verify correct number

10.1.D Proof of Performance

10.1.D.1 Inspection Points *- Not used*

10.1.D.1.1 *Any hold points or inspection requirements*

10.1.D.2 Testing/Trials *- Not used*

10.1.D.2.1 *Details of any tests or trials*

10.1.D.3 Certification *- Not used*

10.1.D.3.1 *Certificates in accordance with the Documentation section of the General Notes.*

10.1.D.4 Documentation *- Not used*

10.1.D.4.1 *Documentation in accordance with the Documentation section of the General Notes.*

10.1.D.5 Training *- Not used*

10.1.A.1.1 *All training requirements.*

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11.0 Hull and Related Structures

11.1 PAINTING OF WIRE LEADS COMPARTMENT AND HOLD

11.1.A Identification

- 11.1.A.1 This specification provides the requirement of areas to be prepared and treated. The Interspec technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.
- 11.1.A.2 The Contractor must complete painting of the wire leads compartment and main hold as detailed in the attached interspec technical specification by International Paint.
- 11.1.A.3 Painting of other areas such as equipment pedestals are as mentioned in this document and in the attached Interspec technical specification by International Paint.

11.1.B References

11.1.B.1 Equipment Data

- 11.1.B.1.1 The coating system will consist of

Area	Description
A frame gantry – Repair	An Intershield 121, abrasion resistant, aluminium pure epoxy primer with Interfine 5703 single pack acrylic modified Polysiloxane finish.
Wire Room, Deck – Repair	An Interbond 998 surface tolerant epoxy scheme
Wire Room, Deckhead and bulkheads – Repair	An Intershield 121, abrasion resistant, aluminium pure epoxy primer with Interfine 5703 single pack acrylic modified Polysiloxane finish.
Ship's Hold Deck Derimeter – Repair	An Interbond 998 surface tolerant epoxy scheme

11.1.B.2 Drawings

- 11.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet	

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	1 of 3 Rev 3.pdf	
N/A	Interspec Paint Specification – Bartlett Coating Spec 2018 Winter Refit 11 09 2017 Rev 2	
B10-18-5	Buoy Winch Seatings Sheet 1 of 1 Rev 0	
B10-24-1-X	Rigging Diagram Sheet 1 of 1 Rev 0	

11.1.B.3 Regulations and Standards

11.1.B.3.1 The following Standards and Regulations apply to work carried out in this section;
The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
FSSM	Fleet Safety and Security Manual (Latest Edition)	Yes
Ship Specific	Vessel Specific – Lead Paint Test Report	Yes
Publications		
18-080-000-SG-003	Paints and Coatings Standard	No
Standards		
ISO 8501-1:2007	Preparation of steel substrates before application of paints and related products	No
	Interspec Paint Specification – Bartlett Coating Spec 2018 Winter Refit 11 09 2017 Rev 2	Yes
Regulations		

11.1.C *Statement of Work*

10.1.D.2 The Contractor must complete painting of the wire leads compartment and main hold as detailed in the attached interspec technical specification by International Paint.

10.1.D.3 No sandblasting operations will be performed when there is a risk of mechanical, pneumatic or electrical components becoming contaminated by the ingress of abrasive materials. For this reason, every effort must be made by the contractor to ensure that all sandblasting work is completed before machinery disassembly. When this is not

Hull and Related Structures

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possible, the contractor must take the appropriate measures to ensure that all vulnerable machinery items are protected in an efficient and effective manner.

- i) All davit wires and crane wires must be completely wrapped to prevent entry of grit. The Contractor must supply all coverings.
- ii) The derrick wires, blocks, and pins must be completely wrapped to prevent entry of grit. The Contractor must supply all coverings.

10.1.D.4 All interference items must be removed for access and painted separately.

10.1.D.5 Identifying insignias, stripes, vessel's name, port of registry, load line, etc. must be given two coats of white paint as specified in the Interspec specification. All the identification markings must be painted; decals must not be used.

10.1.D.6 All coatings must be applied in accordance with the manufacturer's instructions. Re-coat times must be adhered to.

11.1.D Proof of Performance

11.1.D.1 Inspection Points

10.1.D.1.1 The Contractor must follow the quality control requirements identified in the Paint Specification, including the hold points.

10.1.D.1.2 All paint work preparation must be in accordance with manufacturer recommendations and under guidance of a NACE certified Inspector and printed reports must be provided. The inspector must view the work prior to commencement of painting, and after each coating. The shipyard must contract the NACE Inspector from International Paint (contact Mr. Keegan Gemmil)

10.1.D.1.3 The NACE Inspector must obtain the latest information and advice on the Paint system from Mr. Keegan Gemmil, Account Executive, International Paint, 2435 Beta Avenue, Burnaby BC V5C 5N1, tel 604 940 4479, cel 604 315 4347, Keegan.Gemmill@akzonobel.com

11.1.D.2 Testing/Trials *- Not used*

11.1.D.3 Certification

10.1.D.1.4 The contractor must supply a copy of the NACE Certificates in accordance with the Documentation section of the General Notes.

Hull and Related Structures

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11.1.D.4 Documentation

11.1.D.4.1 The contractor must prepare and submit paint reports to verify that coatings were applied in accordance with the Interspec Paint Specification – Bartlett Coating Spec 2018 Winter Refit 08 09 2017

11.1.D.5 Training *- Not used*

11.2 FUEL TANK INSPECTIONS (TCM SURVEY)

11.2.A Identification

11.2.A.1 The following tanks must be opened, certified safe for entry, and must be cleaned and prepared for survey.

11.2.A.2 On completion of the work the tanks must be closed up with new CFM oil resistant nitrile (NBR) gaskets. The contractor must remove and re-install with new gaskets all the tank covers (2 per tank).

11.2.B References

11.2.B.1 Equipment Data

10.1.D.1.5 List of Tanks

Description	Frame Location	TCM Field No.
DB Fuel Tank No. 2 Port	Fr 26 - 44	3L022
DB Fuel Tank No. 2 Starboard	Fr 26 - 44	3L023

11.2.B.2 Drawings

11.2.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	

Hull and Related Structures

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B10-22-2	Hatches and Manholes Rev 1	
B10-1372-11	Hull Compartment inspection and test plan	

11.2.B.3 Regulations and Standards

11.2.B.3.1 The following Standards and Regulations apply to work carried out in this section;
The Contractor must ensure all work completed in this section meets these Standards
and Regulations as well as any other pertinent Federal/Territorial Regulation or
Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		
	Canada Shipping Act 2001	No
	Hull Inspection Regulations (C.R.C., C. 1432)	No

11.2.C *Statement of Work*

11.2.C.1 The contractor must open the tanks for inspection. Access to the Tanks is through
manholes in the main engine room. On completion of all work the contractor must close
up the tank using new CFM oil resistant nitrile (NBR), and must clean and re-use the
bolts, nuts and washers.

11.2.C.2 The tank must be ventilated and certified as safe for entry.

11.2.C.3 Removal and re-installations of interference items to facilitate the work must be
included.

11.2.D Proof of Performance

11.2.D.1 Inspection Points

11.2.D.1.1 The open tanks must be witnessed by the IA, the TA and the TC-MSB Surveyor

11.2.D.2 Testing/Trials *- Not used*

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11.2.D.3 Certification

- 11.2.D.3.1 The Contractor must also provide a copy TC-MSB Division III survey credit to the TA.

11.2.D.4 Documentation

- 11.2.D.4.1 The Contractor must supply the TA with a digital copy of a report detailing the work undertaken, defects, repairs made and measurements and readings taken.
- 11.2.D.4.2 The Contractor must provide a Quality Assurance (QA) report indicating that all disturbed parts of the work have been inspected by the Contractor's QA department for correct installation and fit.

11.2.D.4.3

11.2.D.5 Training *- Not used*

12.0 Propulsion and Maneuvering

12.1 PORT MAIN ENGINE TURBOCHARGER OVERHAUL

12.1.A Identification

- 12.1.A.1 The Port Main engine Turbocharger is at its 10000 hour service interval
- 12.1.A.2 The Turbocharger needs to be exchanged with the spare rotor for survey to the satisfaction of the ABB delegate. The work will be done by CCG crew with contractor assistance as specifically noted in the specification.
- 12.1.A.3 The Contractor must sub-contract a FSR from ABB Canada Inc to oversee and assist with Turbo exchange work by CCG crew. The FSR must provide guidance for all aspects of the work and must provide direct advice to CCG.
- Contact:

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Byron Meston
End User Sales and Service
Western Canada
ABB Inc.
Turbocharging Service Division
1538 Kebet Way
Port Coquitlam BC V3C 5M5
Mobile: (604) 376-7402
Email: byron.i.meston@ca.abb.com

12.1.B References

12.1.B.1 Equipment Data

12.1.B.1.1 The Turbo is manufactured by Brown Boveri and is a model VTR 320, Specification Z4R 429 II 113. Serial Number 73493

12.1.B.1.2 TCm Item 3D010

12.1.B.2 Drawings

12.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	
B10-1372-308	VLE Phase 2-Machinery Arrangement Rev 1	
B10-12-28	Main Engine Turbocharger	

12.1.B.3 Regulations and Standards

12.1.B.3.1 The following Standards and Regulations apply to work carried out in this section:
The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
FSSM	Fleet Safety and Security Manual (Latest	Yes

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Publications		
Standards		
Regulations		

12.1.C *Statement of Work*

10.1.D.7 CCG staff will assist the ABB FSR in the exchange of the Turbocharger Core and related equipment. The Core that is removed is to be sent with ABB for overhaul and returned back to the vessel after overhaul is completed.

10.1.D.8 Description of Work;

10.1.D.8.1 For the turbo, the service must include replacement of:

- a) Rotor Assembly
- b) Induser
- c) Impellor
- d) Nozzle Ring
- e) Cover ring
- f) Diffuser
- g) Re-felting
- h) Seals, gaskets, ect

10.1.D.9 The removed core is to be returned to ABB, overhauled and then returned to the ship.

12.1.D Proof of Performance

12.1.D.1 Inspection Points

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10.1.D.10 The following inspections are required to be verified by the TI/TA

10.1.D.10.1 Prior to final survey, contractor must provide a Mechanical Completion Report, and a written proof that a competent person inspected and approved the system and installation. Report shall be submitted to TA prior to invitation for final survey

12.1.D.2 Testing/Trials *- Not used*

12.1.D.3 Certification *- Not used*

12.1.D.4 Documentation *- Not used*

10.1.D.11 Drawings and reports

10.1.D.11.1 Inspection and Service Report

12.1.D.5 Training *- Not used*

12.2 MAIN ENGINE ELECTRICALLY DRIVEN PUMPS (TCM SURVEY)

12.2.A Identification

12.2.A.1 The Contractor is required to disconnect and remove from the vessel, the standby main engine electrically driven sea water pump and motor, the standby main engine electrically drive fresh water pump, The Port and Starboard main engine electrically driven sea water pumps, and Port and Stbd ME Electrically driven Fresh water pumps. The pumps and motors shall be opened up, cleaned and then prepared for inspection by the TI, TA and for survey by the TCM surveyor in order to obtain the necessary Division III credit.

12.2.B References

12.2.B.1 Equipment Data

12.2.B.2 Name Plate Data

12.2.B.2.1 All 6 pumps are Iron Pump Model CNL 80-80/200-2 with NEMA 7.5hp Electric motors, 450VAC, 3P, 60Hz 3600 RPM.

12.2.B.2.2 Implellor style 3523, 220mm DIA

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12.2.B.2.3 Pump is rated for 49 cubic meters per hour

12.2.B.3 TCM item numbers for pumps

PUMP NAME	TCM ITEM NUMBER
Standby Main Engine Sea Water pump	3H019
Standby Main engine fresh water pump	3H020
Port Main Engine Salt Water Pump	3D013
Port Main Engine Fresh water Pump	3D014
STBD Main Engine Salt Water Pump	3D035
STBD Main Engine Fresh Water Pump	3D036

12.2.B.1 Drawings

12.2.B.1.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	
B10-1372-308	VLE Phase 2-Machinery Arrangement Rev 1	

12.2.B.2 Regulations and Standards

12.2.B.2.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		

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12.2.C *Statement of Work*

10.1.D.12 GENERAL

10.1.D.12.1 The contractor is responsible for all removals of deck plates, fixtures, piping, etc., required to gain access to the work. These may include but not be limited to grids, floor plating and sections of piping. Location of these interference items can be sighted at the time of viewing. The contractor is responsible for all rigging, staging, and craneage for the removal and installation to carry out the Work.

10.1.D.12.2 All piping is to be suitably blanked off so as to prevent the ingress of dirt and to prevent damage prior to re-installation onboard the vessel. Tape wrappings or blanking pieces may be used as required, to provide adequate protection. Loose rags stuck into open pipes will NOT be acceptable. Any damage incurred due to the use of loose rags will be to the Contractor's account.

10.1.D.12.3 All parts and equipment removed from the space, whether for repair or to gain access, are to be suitably protected in a dry heated storage area and are to be inspected for corrosion or deterioration before being re-installed. All finely finished or machined surfaces of parts opened or removed, are to be adequately protected from damage when exposed, moved, or removed. This is of particular importance in the case of journal bearings, shafts, pins, or gear meshing surfaces. If removed, such surfaces are to be preserved against corrosion as well as physical damage

10.1.D.12.4 On completion of all work all removed interference items shall be returned to "as found" condition. All sections of piping that have been removed shall be reinstalled using new gaskets where applicable.

10.1.D.12.5 Any defects or deficiencies found are to be brought to the immediate attention of the IA and the TA for remedial action. Any deficiencies if found will be addressed by PWGSC 1379 action.

10.1.D.12.6 The Contractor shall supply all materials, cleaning fluids, rags, etc. necessary to carry out this work. The Contractor shall be responsible for notifying the TCM Surveyor when the work is ready for inspection.

12.2.C.1 Overhaul Procedure

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- 12.2.C.2 The Contractor must disassemble the pumps and motors into their component pieces.
- 12.2.C.3 Contractor to clean and inspect the pump component pieces. The contractor must conduct the following work:
- 12.2.C.3.1 Replace the pump bearings.
 - 12.2.C.3.2 Check and record impellor and wear ring clearances.
 - 12.2.C.3.3 Renew mechanical seal, Seal Kit will be provided by Ship.
 - 12.2.C.3.4 The contractor must reassemble the pump on completion of survey using new gaskets, seals and sealants.
- 12.2.C.4 The contractor must clean and inspect the motors and conduct the following work:
- 12.2.C.4.1 Replace the motor bearings with new Contractor supplied bearings.
 - 12.2.C.4.2 Megger test the stator windings and forward results to the TI/TA.
- 12.2.C.5 The contractor must reinstall the pumps and motors on the vessel and connect all pipe work using Contractor supplied gaskets

12.2.D Proof of Performance

12.2.D.1 Inspection Points

10.1.D.13 Inspection

10.1.D.13.1 The following must be witnessed by the IA, the TA and the TC-MSB Surveyor:

- a) The pump components laid out for survey.
- b) The motor components laid out for survey.

10.1.D.1.2 The following must be witnessed by the IA and the TA:

- a) The pump components laid out for survey.
- b) The motor components laid out for survey

Power Generation Systems *- not used*

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12.2.D.2 Testing/Trials

12.2.D.1.2 The Following tests are to be performed:

- a) On completion of reassembly a four (4) hour functional test shall be performed on each unit.

12.2.D.2 Certification

10.1.D.13.2 The Contractor must provide a copy TC-MSB Division III survey credit to the TA.

12.2.D.3 Documentation

10.1.D.13.3 The Contractor must supply the TA with a digital copy of a report detailing the work undertaken, defects, repairs made and measurements and readings taken.

10.1.D.13.4 The Contractor must provide a Quality Assurance (QA) report indicating that all disturbed parts of the work have been inspected by the Contractor's QA department for correct installation and fit.

12.2.D.4 Training *- Not used*

13.0 Power Generation Systems *- NOT USED*

13.1 *SPECIFICATION ITEM- LEVEL 2*

14.0 Power Distribution Systems *- NOT USED

14.1 *SPECIFICATION ITEM- LEVEL 2*

15.0 Auxiliary Systems

15.1 OVERHAUL FUEL TRANSFER PUMPS (TCM SURVEY)

15.1.A Identification

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- 15.1.A.1 The Contractor is required to disconnect and remove from the vessel, the Number 1 and Number 2 Fuel transfer pumps. The pumps and motors shall be opened up, cleaned and then prepared for inspection by the TI, TA and for survey by the TCM surveyor in order to obtain the necessary Division III credit.

15.1.B References

15.1.B.1 Equipment Data

Pump Make:	Roper 3600
Size 2"	Specification 6970
Type:	One
Figure:	3611 MGHBRV
Speed:	433 RPM (through a reduction gear)
Total Head:	50 PSI
Capacity GPM:	50 IGM (227 l/min)
Serial:	276917 & 276924
Reduction Gear	Roper N41-1
Ratio:	(3.94:1 ratio)
Electric Motor	CGE
Model	118435 Type K
HP 3	
Frame	184
RPM	1705
Volts	440/3phase/60Hz
Serials	984082 & 984076

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PUMP NAME	TCM ITEM NUMBER
Number 1 Fuel Transfer Pump	3H001
Number 2 Fuel Transfer Pump	3H002

15.1.B.2 Drawings

15.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	
B10-1372-308	VLE Phase 2-Machinery Arrangement Rev 1	

15.1.B.3 Regulations and Standards

15.1.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		

15.1.C *Statement of Work*

10.1.D.13.5 The contractor is responsible for all removals of deck plates, fixtures, piping, etc., required to gain access to the work. These may include but not be limited to grids, floor plating and sections of piping. Location of these interference items can be sighted

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at the time of viewing. The contractor is responsible for all rigging, staging, and crantage for the removal and installation to carry out the Work.

10.1.D.13.6 All piping is to be suitably blanked off so as to prevent the ingress of dirt and to prevent damage prior to re-installation onboard the vessel, Tape wrappings or blanking pieces may be used as required, to provide adequate protection. Loose rags stuck into open pipes will NOT be acceptable. Any damage incurred due to the use of loose rags will be to the Contractor's account.

10.1.D.13.7 All parts and equipment removed from the space, whether for repair or to gain access, are to be suitably protected in a dry heated storage area and are to be inspected for corrosion or deterioration before being re-installed. All finely finished or machined surfaces of parts opened or removed, are to be adequately protected from damage when exposed, moved, or removed. This is of particular importance in the case of journal bearings, shafts, pins, or gear meshing surfaces. If removed, such surfaces are to be preserved against corrosion as well as physical damage

10.1.D.13.8 On completion of all work all removed interference items shall be returned to "as found" condition. All sections of piping that have been removed shall be reinstalled using new gaskets where applicable.

10.1.D.13.9 Any defects or deficiencies found are to be brought to the immediate attention of the IA and the TA for remedial action. Any deficiencies if found will be addressed by PWGSC 1379 action.

10.1.D.13.10 The Contractor shall supply all materials, cleaning fluids, rags, etc. necessary to carry out this work. The Contractor shall be responsible for notifying the TCM Surveyor when the work is ready for inspection.

15.1.C.1 Overhaul Procedure

15.1.C.1.2 The Contractor must disassemble the pump, gearbox and motor into their component pieces.

15.1.C.1.3 Any piping and wiring removed or disconnected to carry out the Contractor's work are to be suitably blanked off or secured to prevent the ingress of dirt and protect the cabling from damage.

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- 15.1.C.1.4 Contractor to clean and inspect the pump component pieces. The contractor must conduct the following work:
- 15.1.C.1.5 Measure and record the pump drive and idler gears.
- 15.1.C.1.6 Measure and record drive and driven shaft diameters.
- 15.1.C.1.7 Measure and record casing bushings.
- 15.1.C.1.8 Inspect relief valve seat, valve and spring.
- 15.1.C.1.9 Renew shaft gland packing.
- 15.1.C.1.10 The contractor must reassemble the pump on completion of survey using new CFM gaskets, seals and sealants.
- 15.1.C.1.11 Contractor to clean and inspect the pump reduction gearbox component pieces. The contractor must conduct the following work:
- 15.1.C.1.12 Replace bearings (CFM).
- 15.1.C.1.13 Inspect the pinion and drive gear.
- 15.1.C.1.14 Replace lip seals.(CFM).
- 15.1.C.1.15 The contractor must reassemble the reduction gearbox on completion of survey using new (CFM) gaskets, seals and sealants. Contractor to fill casing to correct operating level using new contractor supplied Shell Omala 68 oil (approx 1 litre each)
- 15.1.C.1.16 The contractor must clean and inspect the motors and conduct the following work:
- 15.1.C.1.17 Replace the motor bearings with new (CFM) bearings.
- 15.1.C.1.18 Megger test the windings and forward results to the TI/TA.
- 15.1.C.1.19 The contractor must reassemble the motor on completion of survey
- 15.1.C.1.20 Any defects or deficiencies in the pumps, reduction gears or motors are to be brought to the immediate attention of the TI and the TA for remedial action. Any deficiencies if found will be addresses by PWGSC 1379 action.

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15.1.C.1.21 Contractor to ensure pump casings are filled with fuel prior to start of testing, (do not to start the pumps in a completely dry condition)

15.1.D Proof of Performance

15.1.D.1 Inspection Points

10.1.D.13.11 The following must be witnessed by the IA, the TA and the TC-MSB Surveyor:

- a) The pump components laid out for survey.
- b) The motor components laid out for survey.

10.1.D.1.2 The following must be witnessed by the IA and the TA:

- a) The pump components laid out for survey.
- b) The motor components laid out for survey

15.1.D.2 Testing/Trials

15.1.D.2.1 Contractor must carry out a functional test of the transfer pumps. Pumps are to be tested for one (1) hour under normal operational conditions to the satisfaction of TCM, TI/TA

15.1.D.3 Certification

15.1.D.3.1 The Contractor must also provide a copy TC-MSB Division III survey credit to the TA.

15.1.D.4 Documentation

15.1.D.3.2 The Contractor must supply the TA with a digital copy of a report detailing the work undertaken, defects, repairs made and measurements and readings taken.

15.1.D.3.3 The Contractor must provide a Quality Assurance (QA) report indicating that all disturbed parts of the work have been inspected by the Contractor's QA department for correct installation and fit.

15.1.D.5 Training *- Not used*

Auxiliary Systems

CCGS Bartlett

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15.2 BILGE AND PALLAST PUMP OVERHAUL FWD ENGINE ROOM (TCM SURVEY)

15.2.A Identification

- 15.2.A.1 The Contractor is required to disassemble the bilge/ballast pump and motor located in the stbd forward engine room. The pump and motor shall be opened up, cleaned and then prepared for inspection by the TI, TA and for survey by the TCM surveyor in order to obtain the necessary Division III credit.

15.2.B References

15.2.B.1 Equipment Data

Pump Make: KSB Bilge/Ballast
Size 4"
Type: VBS 65-23/1 F Vertical Centrifugal
Speed: 1750 rev/min
Total Head 70 ft (30 PSI)
Capacity GPM: 34 Lt/h (long tons)
Year of Mfg. 1968
Serial 535 706
Electric Motor CGE
Model 118431
HP 7.5
Volts 440/3phase/60Hz
Serial 984060

PUMP NAME	TCM ITEM NUMBER
-----------	-----------------

Auxiliary Systems

CCGS Bartlett

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Bilge and Ballast Pump STbd Fwd Eng Room	3H008

15.2.B.2 Drawings

15.2.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	
B10-1372-308	VLE Phase 2-Machinery Arrangement Rev 1	
B10-15-166	GS Pump by KSB	

15.2.B.3 Regulations and Standards

15.2.B.3.1 The following Standards and Regulations apply to work carried out in this section:
The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		

15.2.C *Statement of Work*

15.2.C.1 The Contractor must disassemble the pump and motor into their component pieces.

Auxiliary Systems

CCGS Bartlett

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- 15.2.C.2 Any piping and wiring removed or disconnected to carry out the Contractor's work are to be suitably blanked off or secured to prevent the ingress of dirt and protect the cabling from damage.
- 15.2.C.3 Contractor to clean and inspect the pump component pieces. The contractor must conduct the following work:
- 15.2.C.4 Replace the pump bearings. (CFM bearings, 2 per pump)
- 15.2.C.5 Check and record impellor and wear ring clearances.
- 15.2.C.6 Renew gland packing (CFM), Chesterson, Soft Nr. 322, 8mm x 8mm.
- 15.2.C.7 Inspect shaft coupling insert.
- 15.2.C.8 The contractor must reassemble the pump on completion of survey using new CFM gaskets, seals and sealants.
- 15.2.C.9 The contractor must clean and inspect the motors and conduct the following work:
- 15.2.C.10 Replace the motor bearings with new (CFM) bearings.
- 15.2.C.11 Megger test the stator windings and forward results to the TI/TA.
- 15.2.C.12 The contractor must reassemble the motor on completion of survey.
- 15.2.C.13 Any defects or deficiencies in the pump or motor are to be brought to the immediate attention of the TI and the TA for remedial action. Any deficiencies if found will be addresses by PWGSC 1379 action.

15.2.D Installation:

- 15.2.D.1 The contractor must reconnect the pump and motor on the vessel and connect all pipe work using (CFM) gaskets.

15.2.E Installation:

- 15.2.E.1 The contractor must reconnect the pump and motor on the vessel and connect all pipe work using (CFM) gaskets.

15.2.D Proof of Performance

Auxiliary Systems

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15.2.D.1 Inspection Points

15.2.D.1.1 The following must be witnessed by the IA, the TA and the TC-MSB Surveyor:

- a) The pump components laid out for survey.
- b) The motor components laid out for survey.

15.2.D.1.2 The following must be witnessed by the IA and the TA:

- c) The pump components laid out for survey.
- d) The motor components laid out for survey

15.2.D.2 Testing/Trials

15.2.D.2.1 Contractor must carry out a functional test of the motor and pump. Pump is to be tested for one (1) hour (sea to sea) to the satisfaction of TCM, TI/TA.

15.2.D.3 Certification

15.2.D.3.1 The Contractor must also provide a copy TC-MSB Division III survey credit to the TA.

15.2.D.4 Documentation *- Not used*

15.2.D.4.1 The Contractor must supply the TA with a digital copy of a report detailing the work undertaken, defects, repairs made and measurements and readings taken.

15.2.D.4.2 The Contractor must provide a Quality Assurance (QA) report indicating that all disturbed parts of the work have been inspected by the Contractor's QA department for correct installation and fit.

15.2.D.5 Training *- Not used*

Domestic Systems

CCGS Bartlett

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16.0 Domestic Systems

16.1 MESS DECK RESURFACING

16.1.A Identification

16.1.A.1 *Brief Statement of Specification Contents or General Instruction – Level 4*

16.1.B References

16.1.B.1 Equipment Data

16.1.B.1.1 *Equipment Details in statements or a table*

16.1.B.2 Drawings

16.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	

16.1.B.3 Regulations and Standards

16.1.B.3.1 The following Standards and Regulations apply to work carried out in this section:
The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		

Domestic Systems

CCGS Bartlett

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Regulations		

16.1.C *Statement of Work*

16.1.C.1 *Statement of work – Main Statement– Level 4*

16.1.C.1.1 *Statement of work – Main Statement– Level 5*

a) *List of Statements – Level 6*

i) *Sub List of items – Level 7*

16.1.C.2*SOW Section Title* Verify correct number

16.1.C.2.1 *5th Level After Bold* Verify correct number

16.1.D Proof of Performance

16.1.D.1 Inspection Points *- Not used*

16.1.D.1.1 *Any hold points or inspection requirements*

16.1.D.2 Testing/Trials *- Not used*

16.1.D.2.1 * Details of any tests or trials*

16.1.D.3 Certification *- Not used*

16.1.D.3.1 *Certificates in accordance with the Documentation section of the General Notes.*

16.1.D.4 Documentation *- Not used*

16.1.D.4.1 *Documentation in accordance with the Documentation section of the General Notes.*

16.1.D.5 Training *- Not used*

16.1.D.5.1 *All training requirements.*

16.2

Deck equipment *- not used*

CCGS Bartlett

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17.0 Deck equipment *- NOT USED*

17.1 *SPECIFICATION ITEM- LEVEL 2*

18.0 Communications and Navigation *- NOT USED*

18.1 *SPECIFICATION ITEM- LEVEL 2*

19.0 Control Systems *- NOT USED*

19.1 *SPECIFICATION ITEM- LEVEL 2*

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: October 2, 2017 10:27 AM
To: McMillan Cody
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Engine Room
Subject: FW: Latest Contract Spec - 11.0 Winch Room Painting Spec
Attachments: Bartlett Coating Spec 2018 Winter Refit 25 09 2017 rev3.pdf

Thanks. NWE should be visiting today to assess the ACM. It is possible that the pipe lagging is high enough & in good enough condition that it will not pose a hazard to workers – but it will make it impossible for us to replace as sea, (becing that we are not technically qualified to handle asbestos). I imagine that they've contacted you regarding whether you want a report in addition to sample test results. Presumably, you've OK'd report. It's always good to have their suggestions & opinion documented.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: McMillan, Cody [mailto:cody.mcmillan@dfo-mpo.gc.ca]
Sent: October-02-17 8:16 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: RE: Latest Contract Spec - 11.0 Winch Room Painting

Attached is the interspec, I will elaborate on the ACM's in the spec, thanks for reminding me.

Cody McMillan
Marine Engineering | Ingénierie navale
(250) 363-8533

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]
Sent: September-30-17 5:52 PM
To: McMillan, Cody
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer
Subject: RE: Latest Contract Spec - 11.0 Winch Room Painting

Cody,

Can we see the International Paint Interspec Technical Spec ? 11.1.A.3 refers to painting Main Hold in addition to "Wire Leads Compartment" (Winch Room).
You might want to elaborate of ACMs": Pipe lagging identified as positive ACM, and most other areas there is no suspect ACM.
Shouldn't we consider it a high risk (to contractors & ship's crew) job to perform extensive work in Winch Room with ACM pipe lagging?

Thanks,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccg-s-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: McMillan, Cody [<mailto:cody.mcmillan@dfo-mpo.gc.ca>]
Sent: September-29-17 2:55 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Latest Contract Spec

Hi Ross, this is where I am at right now. Have a look at it and mark it up.

Cody McMillan

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering
Fisheries and Oceans Canada / Government of Canada
cody.mcmillan@dfo-mpo.gc.ca / Tel: 250-363-8533

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale
Pêches et Océans Canada / Gouvernement du Canada
cody.mcmillan@dfo-mpo.gc.ca / Tél. : 250-363-8533

Pages 477 to / à 528

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Sheppard, Frederick

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: December 29, 2017 4:22 PM
To: [REDACTED]
Cc: McMillan Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: FW: Winch Room Pipe Lagging ACM Testing
Attachments: 34440-ABV1.0 - CCGS Bartlett.pdf

[REDACTED] & Cody,

A total of 28 point were tested for ACM in the Winch Room, (including deck non-skid paint for vermiculite). This was an ideal opportunity to perform a full testing of this compartment, (because it was empty), and to properly asses the risk to the prep & painting crew. Nice to be able to correct erroneous data in asbestos survey.

The lead paint test results will not be received until Jan.2nd, and we expect the paint to test positive for lead. And as per previous email, TCLP documentation will have to be processed for disposal of hazardous paint waste products, (if tests positive for Lead).

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: December-29-17 4:12 PM
To: [REDACTED]
Cc: McMillan Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Subject: FW: Winch Room Pipe Lagging ACM Testing

Mark,

Contrary to the ships annual Asbestos survey, the pipe insulation in the winch room tests negative for asbestos containing material. (Lagging sampled at 8 points.)

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: December-29-17 3:03 PM
To: CCGS-NGCC, Bartlett Chief Engineer

Cc: [REDACTED]

Subject: Re: CCGS Bartlett Dec 29

s.19(1)

s.20(1)(b)

s.20(1)(c)

Hi Ross, bulk report attached. Report to follow next week.
Happy New Year!

Sent from my Samsung Galaxy smartphone.

----- Original message -----

From: [REDACTED]

Date: 2017-12-29 10:45 AM (GMT-08:00)

To: BartlettCE@bar.ccg-ngcc.gc.ca

Cc: [REDACTED]

Subject: CCGS Bartlett Dec 29

Hi Ross, my contact info below. Thanks for contacting me regarding this work.

As discussed on site, you will be having paint contractors working in the Winch compartment removing and renewing paint in proximity to suspect asbestos containing materials. After reviewing the work with you, we concluded that NWest would conduct a WorkSafeBC-compliant hazardous materials assessment of the compartment. Samples will be analysed RUSH and will be sent to you as we receive them. As discussed CCG will be responsible for any repairs to piping insulation sampled by NWest (NWest will tape sample locations in the interim). The official report will follow early next week.

This will be on a time and materials basis. Our rates below:

Technologist - [REDACTED] per hour

Project Manager - [REDACTED] per hour

Senior Project Manager - [REDACTED] per hour

Sample analysis: asbestos RUSH - [REDACTED] per sample

Sample analysis: lead RUSH - [REDACTED] per sample (lead samples have to be sent to a different lab. Results early next week).

Misc. (courier, mileage, consumables etc) - [REDACTED]

Note that waste paint will have to be tested for leachability. Your paint contractor may already have accounted for this. If not, NWest can do the testing when there is waste paint available. This testing is a requirement for disposal of materials under the BC Hazardous Waste Regulation Table 1 Leachate Quality Standards (regulated by the BC Ministry of Environment).

Will you provide a PO or need any other info to produce one?

Best regards,



[REDACTED]
Happy Holidays! NWest has donated to The Mustard Seed in lieu of sending cards and gifts to our clients this season. We wish you and yours all the best now and in the future.

[REDACTED]
North West Environmental Group Ltd.

C. [REDACTED]
P. 250-384-9695 ext. [REDACTED] | F. 250-384-9865
201 - 415 Gorge Road East, Victoria BC , V8T 2W1

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No further information has been removed or severed from this page



**North West
Environmental Group Ltd.**

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett Winch Compartment 2017-18

Date: December 29, 2017
Client Job or PO#: NEED
Project number: 34440

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34440-1b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brown	50	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-1b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-2b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brown	50	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-2b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-3b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brown	50	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-3b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-4b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brown	50	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-4b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34440-5b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brown	50	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-5b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-6b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brown	50	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-6b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-7b Layer 1	Winch Compartment - Starboard Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brown	50	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-7b Layer 2	Winch Compartment - Starboard Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-8b Layer 1	Winch Compartment - Starboard Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brown	50	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-8b Layer 2	Winch Compartment - Starboard Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-9b	Winch Compartment - Decking on Port Side	Dec-29-2017	BR	Anti-Skid Coating	Brown/Grey/Silver	100	None Detected	0	Non-Fibrous	100	
34440-10b	Winch Compartment - Decking on Port Side	Dec-29-2017	BR	Anti-Skid Coating	Brown?Grey/Silver	100	None Detected	0	Non-Fibrous	100	
34440-11b	Winch Compartment - Decking on Starboard Side	Dec-29-2017	BR	Anti-Skid Coating	Brown?Grey/Silver	100	None Detected	0	Non-Fibrous	100	
34440-12b	Winch Compartment - Floor of Starboard Side	Dec-29-2017	BR	Debris	Red	100	None Detected	0	Non-Fibrous	100	
34440-13b	Winch Compartment - Floor of Starboard Side	Dec-29-2017	BR	Debris	Red	100	None Detected	0	Non-Fibrous	100	
34440-14b	Winch Compartment - Floor of Starboard Side	Dec-29-2017	BR	Debris	Red	100	None Detected	0	Non-Fibrous	100	
34440-15b	Winch Compartment - Bulkhead Facing Aft	Dec-29-2017	BR	Firestop	Brown	100	None Detected	0	Non-Fibrous	100	
34440-16b	Winch Compartment - Bulkhead Facing Aft	Dec-29-2017	BR	Firestop	Brown	100	None Detected	0	Non-Fibrous	100	

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34440-17b	Winch Compartment - Bulkhead Facing Aft	Dec-29-2017	BR	Firestop	Brown	100	None Detected	0	Non-Fibrous	100	
34440-21b	Winch Compartment Wall - Starboard Side	Dec-29-2017	BR	Putty	Brown/Black	100	None Detected	0	Non-Fibrous	100	
34440-22b	Winch Compartment Wall - Starboard Side	Dec-29-2017	BR	Putty	Brown/Black	100	None Detected	0	Non-Fibrous	100	
34440-23b	Winch Compartment Wall - Starboard Side	Dec-29-2017	BR	Putty	Brown/Black	100	None Detected	0	Non-Fibrous	100	



LAB# 202314

Sheppard, Frederick

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: January 1, 2018 1:36 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Cc: CCGS-NGCC, Bartlett Captain
Subject: FW: ACM Abatement Training - Internal Audit Asbestos NCR

Importance: High

Ryan,

FYI. Attached correspondence from last patrol applies to us too. [REDACTED]

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: December-26-17 1:09 PM
To: McMillan Cody
Subject: Internal Audit Asbestos NCR

Hi Cody,

During our audit last week we ended up with a minor NCR regarding Asbestos Abatement training. [REDACTED]

.... I will be in contact next trip to get something sorted out.

7.A.10

3.3 ASBESTOS ABATEMENT TRAINING

a) Asbestos abatement training, to the level of Type 2 work, as defined by applicable provincial occupational health and safety regulations, shall be provided, by a provincially recognized training provider, to crew members identified by the Asbestos Coordinator. A minimum of two per crew, normally from the engineering department, will be trained. Refresher training will be provided on a periodic basis as determined by the Asbestos Coordinator and SME and defined within the VSAMP.

b) All asbestos abatement trained personnel are to maintain the currency of their respirator fit testing, as per the CCG Respiratory Protection Program.

c) The VSAMP shall be reviewed annually during shipboard Occupational Health and Safety committee meetings, ensuring that both crews on dual crewed vessels are aware of the VSAMP.

Thanks

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: January 1, 2018 2:26 PM
To: 'George Kohorst'
Cc: McMillan Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Subject: FW: Transit Testing - Asbestos Work etc.
Importance: High

Happy New Year George,

Just thought I'd contact you with a brief note of Bartlett Refit work / status. The next time I'll do so, I'll use the Refit Worklist I gave you initially, then it would function as template for Refit Electrical Report

- EL-01 Cable Transit Packing / Sealing. In Progress. Regarding deck transit above Sewage Media Tank. I've got LGF Environmental contractors aboard on Wed. Jan.3rd to quote on this ACM job.
- EL-02 Electrical Terminal Maintenance - In Progress. And mark will be discussing Intercon Survey Items will you in this regard (Main Eng Cooling Pumps and FO Tran Pumps).
- Incl. EL-22a & EL-22b
- EL-03 MCR Console Electronic Maintenance – In Progress.
- EL-04 Transformer Service – In Progress.
- EL-05 Main Engine Pyrometer Upgrade. (Assistance to ship's crew)
- EL-06 Distribution Ground Faults & Meter. In Progress
- EL-10 Fire Door Hold Back. (MCR door and Foc'sle Bosun's Stores door – Re: Running wires for Fire door magnetic release / holdbacks) *** This did not make it onto your original list for some reason. If possible we'd like to have this work done (running wires for Viking) earlier on in the Refit if possible please.**

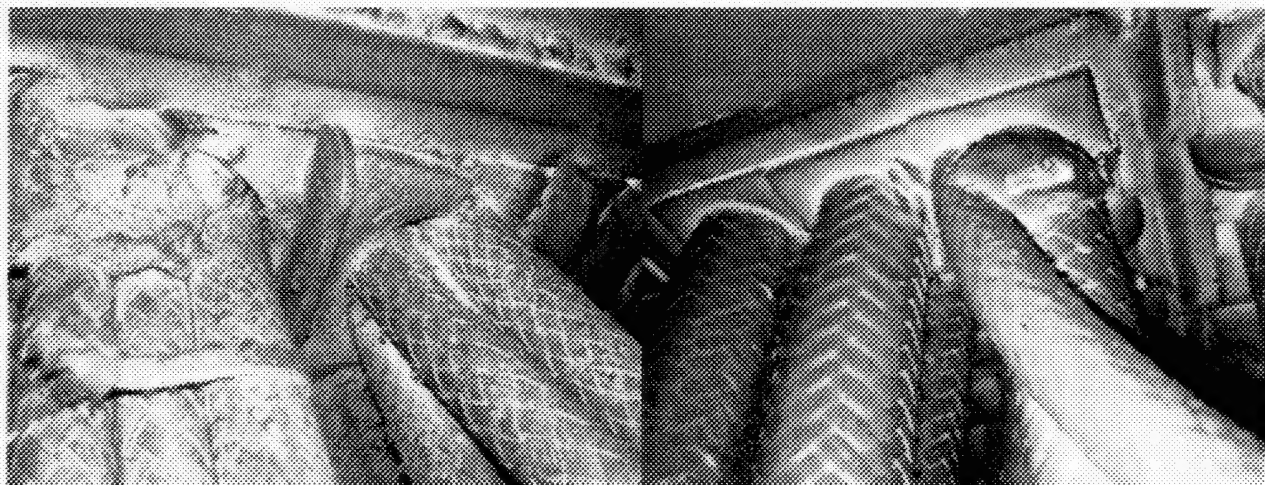
Many Thanks. Talk to you on Wed.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: George Kohorst [mailto:kohoconsulting@shaw.ca]
Sent: December-29-17 6:58 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: McMillan Cody; CCGS-NGCC, Bartlett Captain
Subject: Re: Transit Testing - Asbestos Work
Importance: High

Good Morning

I figured that I would send a few pictures of the transits to show the current state they are in. Of the five transits in that area four of them have multiple cables through single transit blocks as shown. There are also gaps around other cables due to the wrong size blocks being used such as a row of 3 x 30mm blocks and one 20mm block in the same row. If there is any loose asbestos laying on top of these it would fall on us while working from below and also contaminate the space below so before they are disturbed the clean up is required. As Ross has stated the refit has just started so there is time to deal with these properly.



George Kohorst
250 881-2901
kohoconsulting@shaw.ca



On Dec 28, 2017, at 10:08 AM, CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca> wrote:

Cody,

George has done some preliminary investigation on the desk transit above AMS sewage tank, and it is definitely not watertight. He's asking if we can use a firestop injection method to repair, but considering that it is only the start of Refit, I think that we should be addressing the problem properly.

This will entail at least a minimum of asbestos work. I am suggesting that we get an estimate from an asbestos abatement company to remove the adjacent non-asbestos bulkhead panel on alleyway bulkhead above the transit (which is connected to the asbestos bulkhead above the transit on the Upper Deck), and perform an internal cleanup of the topside of the transit to ensure that workers below the transit do not get exposed to loose asbestos dust (from 95% ACM bulkhead panels).

George & I have discussed the financial aspects of this job, and this is best discussed over phone.

Ross McKenzie
Chief Engineer, CCGS Bartlett

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page 1181**

Sheppard, Frederick

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: January 2, 2018 8:33 AM
To: [REDACTED]
Cc: McMillan Cody; [REDACTED]
Subject: FW: CCGS Bartlett Dec 29 - Winch Room Paint Testing Reports forthcoming
Attachments: 34440-ABV1.0 - CCGS Bartlett.pdf

Good Morning [REDACTED] & Happy New Year,

Please forward paint testing reports when they become available.

Many Thanks.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: December-29-17 3:03 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: Re: CCGS Bartlett Dec 29

Hi Ross, bulk report attached. Report to follow next week.
Happy New Year!

[REDACTED]

Sent from my Samsung Galaxy smartphone.

----- Original message -----

From: [REDACTED]
Date: 2017-12-29 10:45 AM (GMT-08:00)
To: BartlettCE@bar.ccgsg-ngcc.gc.ca
Cc: [REDACTED]
Subject: CCGS Bartlett Dec 29

Hi Ross, my contact info below. Thanks for contacting me regarding this work.

As discussed on site, you will be having paint contractors working in the Winch compartment removing and renewing paint in proximity to suspect asbestos containing materials. After reviewing the work with you, we concluded that NWest would conduct a WorkSafeBC-compliant hazardous materials assessment of the compartment. Samples will be analysed RUSH and will be sent to you as we receive them. As discussed CCG will be responsible for any repairs to piping

insulation sampled by NWest (NWest will tape sample locations in the interim). The official report will follow early next week.

This will be on a time and materials basis. Our rates below:

s.19(1)

Technologist - [REDACTED] per hour

s.20(1)(b)

Project Manager - [REDACTED] per hour

s.20(1)(c)

Senior Project Manager - [REDACTED] per hour

Sample analysis: asbestos RUSH - [REDACTED] per sample

Sample analysis: lead RUSH - [REDACTED] per sample (lead samples have to be sent to a different lab. Results early next week).

Misc. (courier, mileage, consumables etc) - [REDACTED]

Note that waste paint will have to be tested for leachability. Your paint contractor may already have accounted for this. If not, NWest can do the testing when there is waste paint available. This testing is a requirement for disposal of materials under the BC Hazardous Waste Regulation Table 1 Leachate Quality Standards (regulated by the BC Ministry of Environment).

Will you provide a PO or need any other info to produce one?

Best regards,



[REDACTED]
Happy Holidays! NWest has donated to The Mustard Seed in lieu of sending cards and gifts to our clients this season. We wish you and yours all the best now and in the future.

Project Manager

North West Environmental Group Ltd.

C. [REDACTED]

P. 250-384-9695 ext. 211 | F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC, V8T 2W1

This message may contain privileged information which is prohibited from disclosure and intended for the named recipient(s) only. If received in error, please contact the sender at North West Environmental immediately and destroy the message and any attachments, copies or printouts.

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pages 532 to / à 534**

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: [REDACTED]
Sent: January 4, 2018 4:25 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: McMillan Cody; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer
Subject: RE: Winchman's Cabin & ACM

Hi Ross,

Thanks for the note. Yes, as long as asbestos containing materials are not being disturbed in any way there should be no issue. The only thing I would double check if I were you are that whatever flooring is going in won't prematurely delaminate if placed on top of the existing, and that the carpet doesn't go over any tiles.

Otherwise, if you are concerned with any of the ACM tile being disturbed, we now have capacity to start the job on Tuesday of next week, and I would expect it to be 1-1.5 days as a moderate risk removal (leaving the bulkhead in place and undisturbed).

Please let me know, and thanks for your help,

Sincerely,

[REDACTED]
Development Manager
Hazpro Environmental Ltd
Address [REDACTED]
Cell [REDACTED]
Office 250-891-4977
Fax 250-220-2252

www.hazpro.org

The information contained in this e-mail is intended only for the individual or entity to whom it is addressed. Its contents (including any attachments) may contain confidential and/or privileged information. If you are not an intended recipient you must not use, disclose, disseminate, copy or print its contents. If you receive this e-mail in error, please notify the sender by reply e-mail and delete and destroy the message.

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]
Sent: Thursday, January 04, 2018 1:40 PM
To: [REDACTED]
Cc: McMillan Cody; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer
Subject: FW: Winchman's Cabin & ACM
Importance: High

Afternoon [REDACTED]

In the interest in staying within the timeline allotted by Winchman's cabin furnishing contractor (Pronautic), we will not be preventing them from completing the cabin work in the interest of removing ACM tiles. Presently they can have their work completed tomorrow, and that is what we're allowing them to do.

I did tell them that they cannot fasten anything to the ACM bulkhead or to tiles without involving you.

Please call and/or visit today if you think that I might be missing part of this picture.

Regards,

s.16(2)

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

This email was scanned by Bitdefender

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: January 8, 2018 10:42 AM
To: [REDACTED]
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Captain; McMillan Cody; CCGS-NGCC, Bartlett Engine Room
Subject: RE: Asbestos analytical report - Waste Oil Tank Bulkheads
Importance: High

Hi [REDACTED]

Many Thanks. Asbestos! Interesting. Yes, we'll need to talk, especially being that we want to have that area re-insulated soon. And it therefore looks like Quantum Murray Environmental may be appropriate for this re-insulation job.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: January-08-18 9:50 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Asbestos analytical report

Hi Ross, I'll give you a shout this afternoon to discuss. In the mean time the area should be made off limits to unprotected workers.

Sent from my Samsung Galaxy smartphone.

Sheppard, Frederick

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: January 15, 2018 3:21 PM
To: [REDACTED]
Subject: FW: CCGS Bartlett - Waste Oil Tank job - Clearance Letter
Attachments: loc jan12.pdf

Hi [REDACTED] You may find value in attaching attached clearance letter to oil Waste Oil Tank documentation folder.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: January-15-18 9:13 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: FW: CCGS Bartlett

Ross,
Please find attached the asbestos and lead paint clearance letter from Ralmax Contracting.
Regards,

[REDACTED]
Yard Superintendent,
Point Hope Maritime Ltd.

From: [REDACTED]
Sent: Friday, January 12, 2018 4:14 PM
To: [REDACTED]
Subject: RE: CCGS Bartlett

Good afternoon [REDACTED]

The attached letter of clearance outlines the procedures used to complete the scope of work.
Call me at [REDACTED] with any questions or concerns.

thank you

[REDACTED]
Ralmax Contracting Ltd.

----- Original Message -----

From: [REDACTED]

To: [REDACTED]
Cc: [REDACTED]
Sent: Fri, 12 Jan 2018 02:24:50 +0000
Subject:

Hi [REDACTED]

Could you email me a report for the asbestos and lead paint abatement that you completed today on the CCGS Bartlett.

Thanks ,

[REDACTED]
Yard Superintendent
Point Hope Maritime

RALMAX

Jan.12, 2018

Point Hope Maritime Ltd
327 Harbor Rd Victoria BC
V8T 3S2

Attn: [REDACTED]

Regarding: Ralmax Contracting Asbestos and lead based paint Removal from CCGS Bartlett.

Ralmax Contracting Ltd was contacted by [REDACTED] of Point Hope Maritime to clean an area contaminated with asbestos containing debris.

- January 10th, [REDACTED] of Ralmax Contracting mobilized tools, equipment and materials to CCGS Bartlett located at 25 Huron Street. He set up an exclusion zone around the work area with asbestos barrier tape and applied chemical paint stripper to a pipe that needed to be stripped of paint.
- January 11th, [REDACTED] returned to remove the lead based paint. Drop sheets were placed under the area being striped and the paint was removed (wet) by a hand held scrapper. The entire area behind the waste oil tank was vacuumed using a H.E.P.A filtered vacuum to remove dust and debris from ceiling, walls and floor.
- As there was a thick, sticky, semi wet layer of oily debris on the tray, [REDACTED] used a hand scrapper to lift and dispose of this layer.
- A grease solvent was applied to the tray to remove any residual oil. The solvent was completely removed with soap and water using rags to wipe it up.
- Finally, the lead based paint in the tray and surrounding area chipped and flaking. [REDACTED] used a hand scraper and H.E.P.A. vacuum to remove loose and flaking paint.
- A fine mist of encapsulant was sprayed throughout the area to lock down any remaining micro dust.

All waste has been appropriately disposed of at a licensed facility.

The asbestos and lead hazards have been removed from within the spaces making the area safe for re-entry.

Regards

[REDACTED]
Hazmat Abatement

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: January-28-18 1:48 PM
To: CCGS-NGCC, Bartlett Logistics Officer
Subject: FW: Bartlett Wheelhouse Console ACM Wireing Insulation IIR
Attachments: 34596 AB1 V1#1-7.pdf; ACM - Wire Insulation.jpg; Wheelhouse Console ACM - Wiring Insulation.pdf

For your records.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

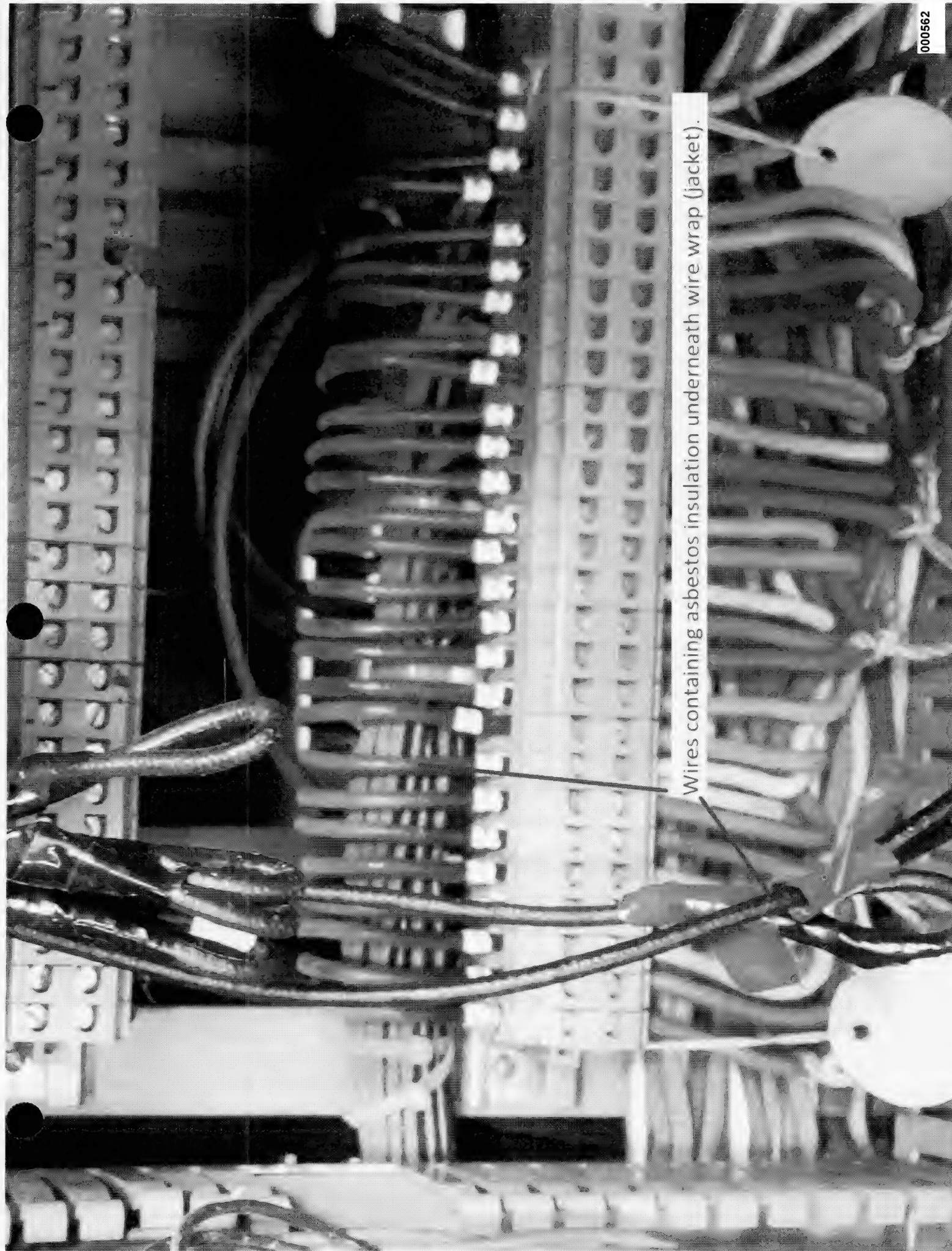
From: CCGS-NGCC, Bartlett Chief Engineer
Sent: January-28-18 10:12 AM
To: Young Renee
Cc: McMillan Cody; CCGS-NGCC, Bartlett Captain
Subject: Bartlett Wheelhouse Console ACM Wireing Insulation IIR

Hi Renee,

Attached is the Bartlett's IIR and supporting documentation for asbestos containing electrical wire insulation found in Wheelhouse consoles.
Please confirm receipt.

Thank you.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca





**North West
Environmental Group Ltd.**

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1
Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett Wheelhouse Wire Testing 2018-01-22

Date: January 24, 2018

Client Job or PO#: NEED

Project number: 34596

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-1b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Green)	Wire Wrap - Green	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-1b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Green)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	
34596-2b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Wrap - Black	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-2b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	
34596-3b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-3b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Insulation - White	60	Chrysotile	70	Synthetic	30	
34596-4b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-4b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Insulation - White	60	Chrysotile	70	Synthetic	30	
34596-5b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Wrap - Dark Grey	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-5b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 - Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-6b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Wrap - Red	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-6b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	
34596-7b Layer 1	Std Bridge Wing Console	Jan-24-2018	JD	Wire (White)	Wire Wrap - White	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-7b Layer 2	Std Bridge Wing Console	Jan-24-2018	JD	Wire (White)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 - Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|---|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett	
Date of Report (YYYY-MM-DD) 2018-01-28	Mailing Address 25 Huron Street Victoria BC V8V 4V9		
Name of Responsible Supervisor Matthew Jackson	Supervisor's Telephone # 250-882-1273		

Organization (Select One)

- ☐ National HQ
 ☐ Coast Guard College
 ☒ Region (if selected, choose Directorate and Program/Branch below)

Regional Directorate (Select One)

- ☐ AC's Office
 ☒ Fleet
 ☐ IBMS
 ☐ ITS
 ☐ Incident Management
 ☐ Navigational Programs

Program/Branch (Select One)

- | | | |
|------------------------------------|---------------------------------------|---|
| <input type="checkbox"/> AtoN | <input type="checkbox"/> MarSup | <input checked="" type="checkbox"/> Refit and Maintenance |
| <input type="checkbox"/> Canso | <input type="checkbox"/> MCI | <input type="checkbox"/> ROC |
| <input type="checkbox"/> CGSS | <input type="checkbox"/> MCTS | <input type="checkbox"/> SAR |
| <input type="checkbox"/> E&I | <input type="checkbox"/> ME | <input type="checkbox"/> Science |
| <input type="checkbox"/> EFM (C&P) | <input type="checkbox"/> MNS | <input type="checkbox"/> Vessels of Concern |
| <input type="checkbox"/> ER | <input type="checkbox"/> MSET | <input type="checkbox"/> Other |
| <input type="checkbox"/> Ice | <input type="checkbox"/> Ops Business | |
| <input type="checkbox"/> ILS | | |

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname 	Given Name 	Initial(s) 	Age
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title 	
Years of experience in current position 			
Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor			
<input type="checkbox"/> Other (Specify) 			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Alongside Victoria Coast Guard Base Refit Period

Date of Incident (YYYY-MM-DD)

2018-01-24

Time of Incident (Local)

1600

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☐ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

January 22, 2018 - Electrical wire and insulation samples were taken from Wheelhouse Fire Detection Panel Console and Starboard Control Console to be tested for asbestos.

January 24, 2018 - Asbestos test results received, two of the seven samples wire samples returned positive for Chrysotile Asbestos (70%). The insulation tested positive while the wire wrap (jacket) tested negative. See attached pdf of test results. Recommendation from Northwest Environmental was to restrict access to location and consider any dust inside the console to be asbestos containing until samples were tested.

January 26, 2018 - Northwest Environmental returned to take dust samples from the two consoles. Discussing the wire insulation test results with the Project Manager from Northwest Environmental, the negative result of asbestos in the wire wrap is a good indication the dust may not contain asbestos, as chaffing wire wraps which contain asbestos due to vibration would be the greatest concern in the shedding asbestos fibers. Visual inspection of asbestos-containing wiring during dust sampling shows wire wrap in good overall condition. Samples couriered to a laboratory in New Jersey for analysis with a rush order (6-hour turnaround) requested on test results. Results expected January 30, 2018.

See attached photo of the wiring taken during dust sampling. Note the black wires not connected in the foreground and in the top wires in the bottom terminal strip are the wires which test result show contain asbestos insulation under the black wire wrap.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☐ Yes ☐ No

Specify

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☐ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☐ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☐ Other action (Specify)

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Use of wiring containing asbestos insulation during vessel construction. The asbestos insulated wire makes up part of the wiring in this console, other wires are rubber insulated with a cloth wrap or PVC insulated. The wiring in the Bridge consoles was not identified in the Asbestos Management Plan.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors

- ☐ Emotional stress
☐ Fatigue
☐ Lack of knowledge and/or skill
☐ Physical stress or capability
☐ Rushing or inattention
☐ Other (Specify)

Job Factors

- ☐ Abuse or misuse of equipment
☐ Inadequate engineering or design
☐ Inadequate hazard assessment
☐ Inadequate personnel to complete task
☐ Inadequate tools/equipment/materials
☐ Inadequate training and/or familiarization
☐ Inadequate work standard/procedure
☐ Lack of enforcement of procedure or supervision
☐ Standards/procedures not developed
☐ Wear and tear
☒ Other (Specify)

Incomplete identification and abatement of hazardous materials onboard

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

Electrical insulation on wires installed outside of high heat location had been overlooked in previous Asbestos Management Surveys. Asbestos-containing wiring connects via terminal strips to rubber insulated cloth wrapped wires which are part of rubber jacketed bronze armored cables. Unable to investigate the consoles further until test results are received.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson C/E	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Steve Buss S/E	250-882-1273		

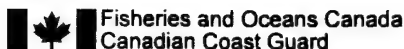
I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Currently awaiting test results of dust from consoles.
 Plan for abatement of dust and wiring to be determined based on results. Results expected January 30, 2018.
 Extensive work on the bridge consoles would be required if wiring is to be replaced.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Vessel Maintenance Manager	ASAP	



K. Investigation Completed By (Required)

Name of person investigating Matthew Jackson	Telephone # 250-882-1273	Signature Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, o=Coast Guard, ou=Coast Guard, email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.27 10:52:32 -0800</small>
Title Chief Engineer	Date (YYYY-MM-DD) 2018-01-27	
Email address BartlettCE@ccgs-ngcc.gc.ca		

Investigators comments

Surprising positive test result for asbestos in an application that would not benefit from the once thought of advantages of using this mineral. Wire and wire wrap (jacket) look to be in good condition. Awaiting test results of the surrounding dust to make decision on course of action.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name Chris Couch	Telephone # 250.213.3685	Signature Chris Couch <small>Digitally signed by Chris Couch DN: cn=Chris Couch, o=Canadian Coast Guard, ou=CCGS Bartlett, email=BartlettCHO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 10:04:58 -0800</small>
Title Chief Officer	Email address BartlettCHO@ccgs-ngcc.gc.ca	Date (YYYY-MM-DD) 2018-01-28

Workplace OHS Committee Member/Health and Safety Representative comments

During this patrol's OHS Meeting, we will review the Safety Manual - Asbestos Containing Materials (7.A.10) to remind everyone of asbestos containing materials (ACM). We will also review the ship's Asbestos Management Plan (AMP). Concur with this report, and nothing further to add.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager Michael McCullagh	Telephone # 250-882-3864	Signature Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 10:08:41 -0800</small>
Title Commanding Officer	Email address BartlettCO@ccgs-ngcc.gc.ca	Date (YYYY-MM-DD) 2018-01-28

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Asbestos Management plan updated to reflect ACM in bridge consuls.
Concur with proposed Corrective & Preventative Measures.

Privacy Notice

The personal information provided on this form is collected under the authority of the [Financial Administration Act](#), the [Public Service Labour Relations Act](#) and



the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

Prepared for: Canadian Coast Guard Services

2018

CCGS BARTLETT

**Limited Hazardous Materials
Risk Assessment and Safe Work Procedures:
2018 Dust Cleanup: Various Compartments**

Project: 34699 RA1 V1.0
Issue date: February 2, 2018



North West
Environmental Group Ltd.

201 – 415 Gorge Road East
Victoria, BC
V8T 2W1

CCGS BARTLETT
February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
2018 Dust Cleanup: Various Compartments

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North West
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CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1 Background and Scope of Work

North West Environmental Group Ltd. (NWWest) was retained by the Canadian Coast Guard (CCG, the Client) to conduct a limited hazardous materials assessment (LHMA) in accordance with WorkSafeBC regulatory requirements outlined in the BC Occupational Health and Safety (OHS) Regulation Section 20.112 – Hazardous Materials. The LHMA was conducted by NWWest representative [REDACTED] on January 26, 2018.

Various areas were found to have asbestos-containing cables. The presence of these cables triggered an assessment of latent dust in Wheelhouse console casings. Concurrently, damage to an asbestos-containing bulkhead panel was identified by CCG crew in the Laundry Room. An abatement contractor cleaned the Laundry Room in all accessible areas, excluding behind the washers and dryers due to inaccessibility at the time. As assessment of the dust in these two areas identified the presence of asbestos fibres in excess of expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (IATL).

The scope of work was provided as follows in the request for quote with additional details provided to the attending technician at the time of this assessment.

Asbestos in latent dust in the Laundry room fell in the moderate range ($>10,000$ to $100,000$ structures per square centimetre (s/cm^2), warranting additional cleaning efforts behind the washers and dryers. Asbestos in latent dust in the Wheelhouse consoles fell in the high range ($>100,000$ s/cm^2). It is suspected that the asbestos is a result of pulling asbestos-containing cabling throughout the years.

Note that there is no accepted, standardized method of determining the mobility of asbestos fibres from latent dust into the air. The rate of mobility is dependent on various factors. The main factor for mobility on the vessel is vibration and movement during normal at-sea operations, therefore, it has been deemed prudent to remove all loosely adhered and safe to access dust from these areas.

Bulk sampling was undertaken of stored gasket materials in the Machinery Control Room Stores (MCR Stores). Chrysotile asbestos was identified in rope gasket/packing materials. These materials have been stored exposed in the MCR Stores for an unknown length of time.

The following document presents a risk assessment and provides safe work procedures for removing asbestos-containing dust from the following locations:

1. Wheelhouse and consoles.
2. Laundry Room, specifically behind the washers and dryers.
3. Void space beneath the Wheelhouse.
4. MCR console.
5. MCR stores.

Risk assessments and general procedures are based on our understanding of the scope of work and the methods and means intended to be used by the Abatement Contractor. Should the work activity type differ from what is noted herein, a new risk assessment may be required for that activity.

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February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1.1 Wheelhouse and Consoles

Scope of Work

- Remove loosely adhered dust from all surfaces within all consoles.
- Clean all surfaces in the Wheelhouse.
- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

1. Moderate risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at all Wheelhouse entrances. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- HEPA vacuum and bag curtains and other removable porous materials that will be reused. These items will be laundered prior to reuse.
- 6-mil poly drop sheet around console access to prevent entrainment of dust into the carpet.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within consoles. Damp wipe non-porous surfaces. **DO NOT DAMP WIPE CABLES.** Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum and wipe all surfaces within the Wheelhouse to remove loosely adhered latent dust. Binders/books: only HEPA vacuum the outer surfaces. **CAUTION:** take care not to change any settings on the control panels.
- HEPA vacuum the carpet using a carpet head attachment.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



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Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1.2 Laundry Room

Scope of Work

- Remove loosely adhered dust from all surfaces behind the washers and dryers.
- Clean all surfaces in the Laundry Room.
- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed.

Contractor Requirements

Remove loosely adhered dust from behind washers and dryers and clean all Laundry Room surfaces

2. Moderate risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the Laundry Room entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- A pop-up or small enclosure may be constructed in the Alleyway outside the Laundry Room to create more work space. If used, it must not impede worker access through the Alleyway. Coordinate with CCG crew.
- Dismount the washers and dryers to access the space behind them.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces on the back sides of the units and the bulkhead and deck behind. Damp wipe non-porous surfaces. **DO NOT DAMP WIPE CABLES.** Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- NWest will conduct an inspection at this time, prior to re-installation of the units.
- Upon successful inspection, reinstall units.
- HEPA vacuum exposed surfaces of the Laundry Room (i.e. do not open millwork to clean surfaces inside as these were cleaned previously).
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake a final inspection and air clearance sampling.



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Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1.3 Void Space Under Wheelhouse

Scope of Work

- Remove loosely adhered dust from all surfaces.
- Remove all dust and debris from deck.

• **Hazards:** Asbestos-containing dust. Vitreous fibres from exposed Fibreglass-type insulation. Red primer assumed to contain lead. Enclosed space with a single entrance/exit.

Contractor Requirements

Remove loosely adhered dust from all surfaces.

3. Moderate risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance to the void space. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Install a certified negative air unit (NAU) to draw air out of the space. Place it in such a manner as it does not impede regular or emergency access/egress of the space. The intent is to pull makeup air into all areas of the space, therefore, the extraction duct or NAU should be placed as far from the entrance as practicable to avoid short circuiting.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces in the space. Damp wipe non-porous surfaces. **DO NOT DAMP WIPE** CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- Work should start from the entrance and move into the space to reduce the amount of contamination that accumulates on worker's coveralls.
- Note: additional effort may be required to remove all dust from high contact surfaces such as the deck (i.e. remove all dust, not just loosely adhered material).
- Due to the small volume of the work area and anticipated increased concentration of fibres rendered airborne during cleaning activities, workers must utilize **powered air purifying respirators (PAPRs)** equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



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Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1.4 MCR Console

Scope of Work

- Remove loosely adhered dust from all surfaces within the console.
- Remove loosely adhered dust from the deck behind the console and from cables running out of the console, up to the first cable tray bracket.
- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

4. Moderate risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- 6-mil poly drop sheet around console access.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within and behind console. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum the deck around console openings.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.5 MCR Stores

Scope of Work

- Remove box containing asbestos rope gaskets/packing. Remove any visually similar materials, after confirming with CCG these additional materials can be disposed.
- Clean the shelving unit and adjacent surfaces within three feet.



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Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

5. Moderate risk cleanup activities

- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Remove identified bulk materials and place in 6 mil poly bags. Dispose as asbestos waste.
- Remove from the shelving unit each piece of equipment or material to be kept. HEPA vacuum all exterior surfaces and place in the MCR.
- When all items are removed from the shelving unit, HEPA vacuum and damp wipe the shelving unit.
- HEPA vacuum and damp wipe all surfaces behind and adjacent to the shelving unit.
- NWest will undertake an inspection for cleanliness at this time.
- Upon successful inspection, items can be replaced.
- HEPA vacuum the deck.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.6 Additional Requirements

- If suspect materials are discovered during abatement activities that have not been included in this risk assessment, work must stop and the material assessed by a qualified person.
- Submit Notice of Project complete with site specific work procedures to WorkSafeBC no less than 48 hours prior to commencing work
- All HEPA vacuums and NAUs must be certified (DOP/PAO tested) within 12 months of use. Recommend on-site certification to ensure units are functioning properly after transport.



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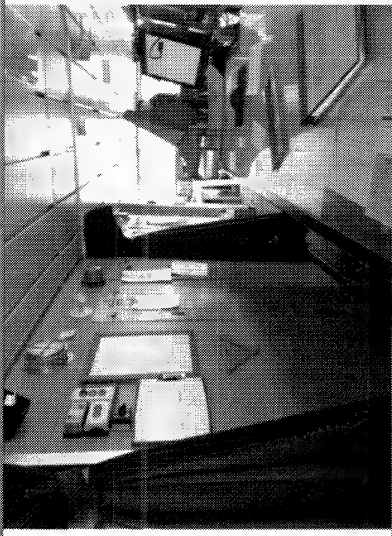


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February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
2018 Dust Cleanup: Various Compartments

- Provide occupational health and safety program including exposure control plans for asbestos, lead, vitreous fibres, and silica as well as procedures for de-energization and lockout if required.
- Provide all first aid for contractor workers.
- Other personal protective equipment (PPE) such as safety eyewear, hard hats, or face protection may be required. Site conditions may necessitate the use of alternative respirator cartridges (e.g. nearby welding, chemical applications, or vehicle exhaust). For the purposes of handling the above identified hazardous materials, all cartridges must utilize P-100 particulate filters, at minimum.
- No wet wiping, wire brushing, or application of liquids to electrical cabling.
- Contractor shall coordinate schedule around the crew's schedule including fueling events, maintenance, practice drills and any other reasonably foreseeable activity. Contractor is responsible for coordination with Chief Engineer and Chief Steward.
- All air sampling to be conducted by NWest.




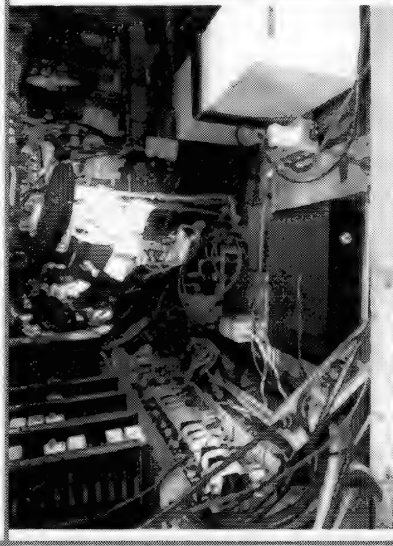
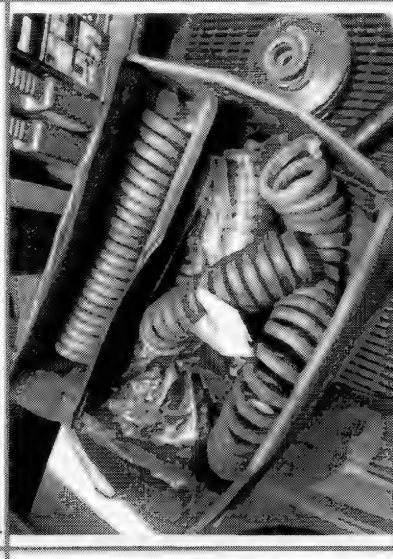


2 Photo Plate

		
<p>Unit/Location: Wheelhouse Description: Overview Comments: Curtains and other porous items meant for reuse will be HEPA vacuumed, bagged, and laundered. HEPA vacuum and wipe all surfaces.</p>	<p>Unit/Location: Wheelhouse console Description: Overview of typical console Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.</p>	<p>Unit/Location: Laundry Room Description: Overview Comments: Units are framed into place.</p>



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	<p>Unit/Location: Laundry Room</p> <p>Description: Dust behind washers and dryers to be cleaned.</p> <p>Comments: Remove units and clean backsides of units and the bulkhead and deck.</p>		<p>Unit/Location: Void Space Under Wheelhouse</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum and wipe to remove loosely adhered dust.</p>		<p>Unit/Location: Void Space Under Wheelhouse</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum and wipe to remove loosely adhered dust. Fibreglass-type insulation present.</p>
	<p>Unit/Location: MCR</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.</p>		<p>Unit/Location: MCR</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.</p>		<p>Unit/Location: MCR Stores</p> <p>Description: Asbestos-containing rope gaskets/packing stored exposed.</p> <p>Comments: Dispose of ACM, clean shelving and adjacent surfaces within 2 feet.</p>



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February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
2018 Dust Cleanup: Various Compartments

3 Validation

All work undertaken was conducted according to standardized methods and otherwise in accordance with protocols and procedures currently utilized by occupational hygiene professionals operating in this jurisdiction. No assessment was requested or made of other potential areas of asbestos or lead contamination that may or may not be present within the vessel.

Signature on file



Signature on file



Qualified Person as per OHS Reg 6.1
Report review



CCGS BARTLETT
February 2, 2018

Appendix A. Analytical Reports

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
2018 Dust Cleanup: Various Compartments

No information has been removed or severed from this page



North West
Environmental Group Ltd.

CCGS-NGCC, Bartlett Chief Engineer

From: [REDACTED]
Sent: February-03-18 10:51 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: Bartlett Air Results - Feb 3
Attachments: 34694 AA3 V1.0 2018-02-03 - CCGS Bartlett Background Testing S#1-35.pdf

Hi Matt, additional air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected as per my earlier email and have been analyzed. As before all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

We can chat more tomorrow.

Best,



[REDACTED]
Project Manager
North West Environmental Group Ltd.

C. [REDACTED]
P. 250-384-9695 ext. [REDACTED] | F. 250-384-9865
201 - 415 Gorge Road East, Victoria BC, V8T 2W1

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201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Background Testing

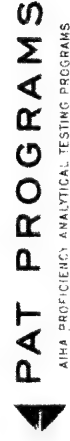
Date: February 03, 2018

Client Job or PO#: NEED

Project number: 34694

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	V/vv	LOQ	Comment
34694-3a	Feb-02-2018	Feb-02-2018	(AMB) Control Room	AMB	JD	2.04	12:05	14:12	127	0.5	100	259.08	0.64	<0.01	VV	<	
34694-4a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley Aft	AMB	JD	5.12	11:33	14:46	193	4.0	100	988.16	5.10	<0.01	VV	<	
34694-5a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley FWD	AMB	JD	5.12	11:42	14:47	185	3.0	100	947.2	3.82	<0.01	VV	<	
34694-6a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Oilers Aft Cabin	AMB	JD	2.04	11:22	14:01	159	2.0	100	324.36	2.55	<0.01	VV	<	
34694-7a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Winchman's Cabin	AMB	JD	2.61	11:19	13:58	159	3.0	100	414.99	3.82	<0.01	VV	<	
34694-8a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Alley	AMB	JD	5.1	11:07	16:44	337	2.5	100	1718.7	3.18	<0.01	VV	<	
34694-9a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Logistic Officer's Cabin	AMB	JD	2.5	10:59	13:56	177	3.5	100	442.5	4.46	<0.01	VV	<	
34694-10a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Lounge	AMB	JD	2.8	10:55	13:47	172	3.5	100	481.6	4.46	<0.01	VV	<	
34694-11a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Alley	AMB	JD	5.12	11:54	16:58	304	1.5	100	1556.48	1.91	<0.01	VV	<	
34694-12a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Chief Officer's Cabin	AMB	JD	2.36	11:47	14:19	152	5.5	100	358.72	7.01	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
34694-13a	Feb-02-2018	Feb-02-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34694-23a	Feb-02-2018	Feb-02-2018	(AC) Poop Deck Lounge	AC	JD	13.56	14:27	16:55	148	6.5	100	2006.88	8.28	<0.01	V	<	
34694-24a	Feb-03-2018	Feb-03-2018	(AMB) Boat Deck Chief Officer (Location 1)	AMB	JD	2.47	08:26	18:42	616	4.5	100	1521.52	5.73	<0.01	W	<	
34694-25a	Feb-03-2018	Feb-03-2018	(AMB) Boat Deck Alley (Location 2)	AMB	JD	2.54	07:55	17:43	588	4.0	100	1493.52	5.10	<0.01	W	<	
34694-26a	Feb-03-2018	Feb-03-2018	(AMB) Poop Deck Lounge (Location 3)	AMB	JD	2.54	07:50	17:40	590	4.5	100	1498.6	5.73	<0.01	W	<	
34694-27a	Feb-03-2018	Feb-03-2018	(AMB) P. Deck Logistics Officer Cabin (Location 4)	AMB	JD	2.54	08:06	17:55	589	5.5	100	1496.06	7.01	<0.01	V	<	
34694-28a	Feb-03-2018	Feb-03-2018	(AMB) Poop Deck Alley (Location 5)	AMB	JD	2.54	07:57	17:45	588	7.5	100	1493.52	9.55	<0.01	V	<	
34694-29a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Winchman's Cabin (Location 6)	AMB	JD	2.54	08:16	18:00	584	6.0	100	1483.36	7.64	<0.01	V	<	
34694-30a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Oilers Aft Cabin (Location 7)	AMB	JD	2.54	08:12	17:51	579	15.0	100	1470.66	19.11	<0.01	V	<	
34694-31a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Alleyway Aft (Location 8)	AMB	JD	2.54	08:05	17:49	584	2.0	100	1483.36	2.55	<0.01	W	<	
34694-32a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Alley FWD (Location 9)	AMB	JD	2.54	08:01	17:45	584	2.0	100	1483.36	2.55	<0.01	W	<	
34694-33a	Feb-03-2018	Feb-03-2018	(AMB) Above Tank Top Control Room (Location 10)	AMB	JD	2.52	08:21	18:04	583	7.0	100	1469.16	8.92	<0.01	V	<	
34694-34a	Feb-03-2018	Feb-03-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34694-35a	Feb-03-2018	Feb-03-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.


QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.


WV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

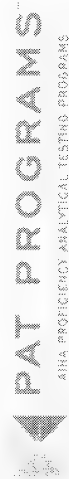
Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

 Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

 Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Officer
Sent: February 4, 2018 8:35 AM
To: Joseph Van Der Sande; John Benckhuysen; [REDACTED]
Subject: FW: Bartlett Air Results - Feb 3
Attachments: 34694 AA3 V1.0 2018-02-03 - CCGS Bartlett Background Testing S#1-35.pdf

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: February-04-18 8:05 AM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: FW: Bartlett Air Results - Feb 3

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: [REDACTED]
Sent: February-03-18 10:51 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: Bartlett Air Results - Feb 3

Hi Matt, additional air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected as per my earlier email and have been analyzed. As before all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

We can chat more tomorrow.

Best,



[REDACTED]
Project Manager
North West Environmental Group Ltd.

C. [REDACTED]
P. 250-384-9695 ext. [REDACTED] F. 250-384-9865
201 - 415 Gorge Road East, Victoria BC, V8T 2W1

This message may contain privileged information which is prohibited from disclosure and intended for the named recipient(s) only. If received in error, please contact the sender at North West Environmental immediately and destroy the message and any attachments, copies or printouts.



North West
Environmental Group Ltd.

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 01, 2018

Client Job or PO#: NEED

Project number: 34694

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34694-1b	MCR Stores	Feb-01-2018	JD	Rope Gasket (~1.5cm)	White / Grey	100	Chrysotile	30	Synthetic (50%) Non-Fibrous (20%)	70	
34694-2b	Engine Room	Feb-01-2018	BR	Wiring - Black, ~1cm	White / Black	100	Chrysotile	30	Cellulose (30%) Synthetic (10%) Non-Fibrous (30%)	70	



AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos
Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6435034 Client No.:34651-6b	Location: WH Fire Panel Console FWD Area (cm ²): 100 Density (s/mm ²): 1260	Concentration (s/cm ²): 6040000 Asbestos Type(s): Chrysotile Amosite Anthophyllite
Lab No.:6435035 Client No.:34651-7b	Location: WH Fire Panel Console AFT Area (cm ²): 100 Density (s/mm ²): 1040	Concentration (s/cm ²): 9990000 Asbestos Type(s): Chrysotile Amosite
Lab No.:6435036 Client No.:34651-8b	Location: WH FWD Stbd Console Area (cm ²): 100 Density (s/mm ²): 76.9	Concentration (s/cm ²): 370000 Asbestos Type(s): Chrysotile
Lab No.:6435037 Client No.:34651-9b	Location: WH Batch Blank Area (cm ²): Blank Density (s/mm ²): <7.69	Concentration (s/cm ²): NA Asbestos Type(s): None Detected
Lab No.:6435038 Client No.:34651-10b	Location: WH Process Blank Area (cm ²): Blank Density (s/mm ²): 7.69	Concentration (s/cm ²): NA Asbestos Type(s): Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature: _____

Analyst: _____

Approved By: _____

Frank E. Ehrenfeld, III
Laboratory Director



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console
Asbestos Testing
Project No.: 34651

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console
Asbestos Testing
Project No.: 34651

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435034
Client No.:34651-6b

Area Sampled (cm²):100
Location:WH Fire Panel Console FWD

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Volume Filtered (mL):0.1
Dilution Factor (mL):50
Grid Openings:3
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0390
Sensitivity (s/mm²):25.6
Detection Limit (s/cm²):123000

Asbestos Structures: 49
Structures < 5 Microns: 44
Structures ≥ 5 µm: 5
Structure Density (s/mm²): 1260
Structure Concentration (s/cm²): 6040000
Asbestos Type(s):
Chrysotile
Amosite
Anthophyllite

Structure Density (s/mm²):<25.6
Structure Concentration (s/cm²):<123000
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6435035
Client No.:34651-7b

Area Sampled (cm²):100
Location:WH Fire Panel Console AFT

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Volume Filtered (mL):0.05
Dilution Factor (mL):50
Grid Openings:2
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0260
Sensitivity (s/mm²):38.5
Detection Limit (s/cm²):370000

Asbestos Structures: 27
Structures < 5 Microns: 22
Structures ≥ 5 µm: 5
Structure Density (s/mm²): 1040
Structure Concentration (s/cm²): 9990000
Asbestos Type(s):
Chrysotile
Amosite

Structure Density (s/mm²):<38.5
Structure Concentration (s/cm²):<370000
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Approved By:

Date Analyzed: 01/31/2018

Signature:

Analyst:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 5:48:16

Page 1 of 4

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9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Project: CCGS Bartlett Wheelhouse Console Asbestos Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435036
Client No.: 34651-8b
Volume Filtered (mL): 0.1
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 92500

Area Sampled (cm²): 100
Location: WH FWD Stbd Console
Asbestos Structures: 4
Structures < 5 Microns: 2
Structures ≥ 5 μm: 2
Structure Density (s/mm²): 76.9
Structure Concentration (s/cm²): 370000
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <92500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6435037
Client No.: 34651-9b
Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Area Sampled (cm²): Blank
Location: WH Batch Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018
Date Analyzed: 01/31/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:

Analyst:

Dated : 1/31/2018 5:48:16



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Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos
Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435038
Client No.: 34651-10b

Area Sampled (cm²): Blank
Location: WH Process Blank

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
Amosite

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Approved By:

Date Analyzed: 01/31/2018

Signature:

Analyst:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 5:48:16

Page 3 of 4

000595



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console
Asbestos Testing
Project No.: 34651

Client: NOR765



North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett Laundry Room Insp and Clearances

Date: January 30, 2018
Client Job or PO#: NEED
Project number: 34659

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34659-1a	Jan-30-2018	Jan-30-2018	(AC1) Sink	AC	JD	15.45	08:35	11:35	180	2.0	100	2781	2.55	<0.01	VV	<	
34659-2a	Jan-30-2018	Jan-30-2018	(AC2) Entrance	AC	JD	15.45	08:35	11:35	180	5.0	100	2781	6.37	<0.01	VV	<	
34659-3a	Jan-30-2018	Jan-30-2018	(QC) Process Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34659-4a	Jan-30-2018	Jan-30-2018	(QC) Batch Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.


QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.


W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

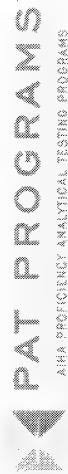
Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

 Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

 Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSPC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314



s.19(1)

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And Clearances
Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6435039
Client No.:34659-1b

Location: Laundry Behind Washer
Area (cm²): 100
Density (s/mm²): 61.5

Concentration (s/cm²): 14800
Asbestos Type(s): Chrysotile Amosite

Lab No.:6435040
Client No.:34659-2b

Location: (QC) Process Blank
Area (cm²): Blank
Density (s/mm²): <7.69

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Lab No.:6435041
Client No.:34659-3b

Location: (QC) Batch Blank
Area (cm²): Blank
Density (s/mm²): <7.69

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Approved By:

Date Analyzed: 01/31/2018

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Signature:

Frank E. Ehrenfeld, III
Laboratory Director

Analyst:

Dated : 1/31/2018 2:54:39

Page 1 of 3

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

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iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

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iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And Clearances
Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435039
Client No.:34659-1b

Volume Filtered (mL):2
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):1850

Area Sampled (cm²):100
Location:Laundry Behind Washer

Asbestos Structures: 8

Structures < 5 Microns: 7
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 61.5
Structure Concentration (s/cm²): 14800
Asbestos Type(s):
Chrysotile
Amosite

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:1

Structure Density (s/mm²):7.69
Structure Concentration (s/cm²):1850
Non-Asbestos Type(s):
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:12:42:33PM

Lab No.:6435040
Client No.:34659-2b

Volume Filtered (mL):7
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):NA

Area Sampled (cm²):Blank
Location:(QC) Process Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

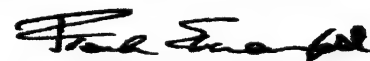
Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And Clearances
Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435041
Client No.:34659-3b

Area Sampled (cm²):Blank
Location:(QC) Batch Blank

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Volume Filtered (mL):7
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):NA

Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

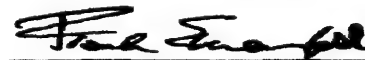
Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature: 

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Client: NOR765



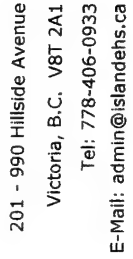
201 - 990 Hillside Avenue
Victoria, B.C. V8T 2A1
Tel: 778-406-0933
E-Mail: admin@islandehs.ca

Project: 10603
Location: 21 Huron St, Victoria, BC, Bartlett
Client: Quantum Murray LP

Permissible Exposure Limit:

0.1 fibres/mL (unprotected persons)															
Sample #	Date Collected	Area	Type*	Analyst	Flow Initial	Flow Final	Time	# Fibres	# Fields	Avg. Flow Rate (L)	Density (fib/mm2)	Conc. (fib/mL)	LOD	LOQ	Comments
1	25-May-16	Blank	BLK	HD				0	100	0.00	0.00	0.000	*	**	Field blank
2	25-May-16	Clean room Outside	CR	HD	2.4	2.4	428	8.5	100	2.40	10.83	0.004		**	Clean room during drywall removal in Senior Officer Cabin
3	25-May-16	containment	AMB	HD	2.4	2.3	425	3.5	100	2.35	4.46	0.002	*	**	Ambient sample outside containment during drywall removal in Senior Officer Cabin
4	25-May-16	Work area	OCC	HD	2.5	2.5	25	361.5	20	2.50	2302.55	14.184			Augusto (PAPR) during drywall removal
5	25-May-16	Work area	AC	HD	16.0	15.0	150	8.5	100	15.50	10.83	0.002	*	**	Senior Officer Cabin after drywall removal on perimeter wall
6	25-May-16	Work area	AC	HD	16.0	15.5	150	4.0	100	15.75	5.10	0.001	*	**	Senior Officer Cabin after drywall removal on perimeter wall

***Legend**
CR - clean room
AMB - ambient
OCC - occupational
AC - air clearance
FB - Field Blank



Location: 21 Huron St, Victoria, BC, Bartlett
Client: Quantum Murray LP

Permissible Exposure Limit:

Sample #	Date Collected	Area	Type*	Analyst	Flow Initial	Flow Final	# Fibres	# Fields	Avg. Flow Rate	Vol. (L)	Density (fib/mm2)	Conc. (fib/mL)	LOD	LOQ	Comments
0.1 fibres/mL (unprotected persons)															

Analysis in accordance with the NIOSH 7400 fiber counting method. Limit of Quantitation (LOQ) = 100 - 1300 fibres/mm2



**North West
Environmental Group Ltd.**

Unit 210 - 2950 Douglas Street
Victoria, B.C. V8T 4N4

Air Sample Report

Tel: 250-384-9695
Fax: 250-384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Sidney
Contractor: Canadian Coast Guard - Sidney
Project: Bartlett HEPA vac DOP and MCR lagging

Date: May 30, 2012
Client Job or PO#: F1782-120108
Project number: 17559

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	Comment
17559-1	May-30-2012	May-30-2012	Machinery Control Room	AMB	WR	2.05	10:07	11:07	60	3.5	100	123.00	4.46	0.014	WV	
17559-2	May-30-2012	May-30-2012	Electrical Workshop off Machinery Control Room	OCC	WR	2	10:00	11:07	67	8.5	100	134	10.83	0.031	V	Glove Bagging and Cleaning

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber also known as "the clean room". Must not exceed 0.1 fibres per ml
 AMB - ambient: sample collected in an occupied space adjacent to the work area. **Must not exceed 0.1 fibres per ml**
 OCC - occupational: sample collected on a worker within the work area. **Must not exceed 50% of 0.1 fibres per ml x the protection factor of respirator in use by the worker.**
 AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.
 QC - quality control: Blank field testing for quality assurance.
 OL - overloaded: This is when the air sample is so overloaded that it is unreadable.
 WV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)
 V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)
 Permissible Exposure Limit: 0.1 fibres/mL (unprotected persons)

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Captain
Sent: February 9, 2018 1:41 PM
To: 'roc3@pac.dfo-mpo.gc.ca'
Cc: COR; CCGS-NGCC, Bartlett Chief Officer; 'roc3@pac.dfo-mpo.gc.ca'
Subject: FW: ACM bulkhead seam maintenance
Attachments: ACM Bulkhead Seam.jpg

Kevin;

See below.

We have some asbestos panelling cracks to repair.

I intend to secure Victoria Base after air tests completed at ~ 18:00.

We will need 2 hours to affect the crack caulking.

I will depart Victoria Base at approx. 20:00 for the west Coast.

That will put us entering the Southern SAR zone at Amphitrite Point to release HMCS Nanaimo tomorrow at approx. 05:00.

Please advise HMCS Nanaimo and ask when and where she wants to transfer our Rescue Specialist. (We can affect transfer with Bartlett-1)

Captain Mike McCullagh

Commanding Officer, CCGS Bartlett

Email: BartlettCO@bar.ccs-ngcc.gc.ca

Cell: [REDACTED]

Tellular: [REDACTED]

Victoria CG Base Landline: 250.480.2692

Iridium Voice: [REDACTED]

Iridium Data: [REDACTED]

Mailing Address:

25 Huron Street

Victoria BC V8V 4V9



Government of Canada
Gouvernement du Canada

Canada

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: February-09-18 12:53 PM

To: CCGS-NGCC, Bartlett Captain

Subject: FW: ACM bulkhead seam maintenance

Hi Captain,

Can we have a few hours alongside this evening to seal a the splits in the sealing caulk found by the deck crew this morning? Following [REDACTED] recommendation below.

Matt Jackson
Chief Engineer

CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: [REDACTED]
Sent: February-09-18 12:35 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: RE: ACM bulkhead seam maintenance

Hi Matt, yes, any damage should be sealed. In addition, you should use your HEPA vacuum to clean surfaces immediately beneath such damage. The worker(s) doing the repair and vacuum work should wear a half-face respirator and have been fit tested within the last year and be clean shaven. [REDACTED] can do fit tests if needed, if he has the irritant smoke with him today. If not, we can do fit tests over the weekend.



North West Environmental Group Ltd.

C. [REDACTED] (Primary)
P. 250-384-9695 ext. [REDACTED] F. 250-384-9865
201 - 415 Gorge Road East, Victoria BC , V8T 2W1

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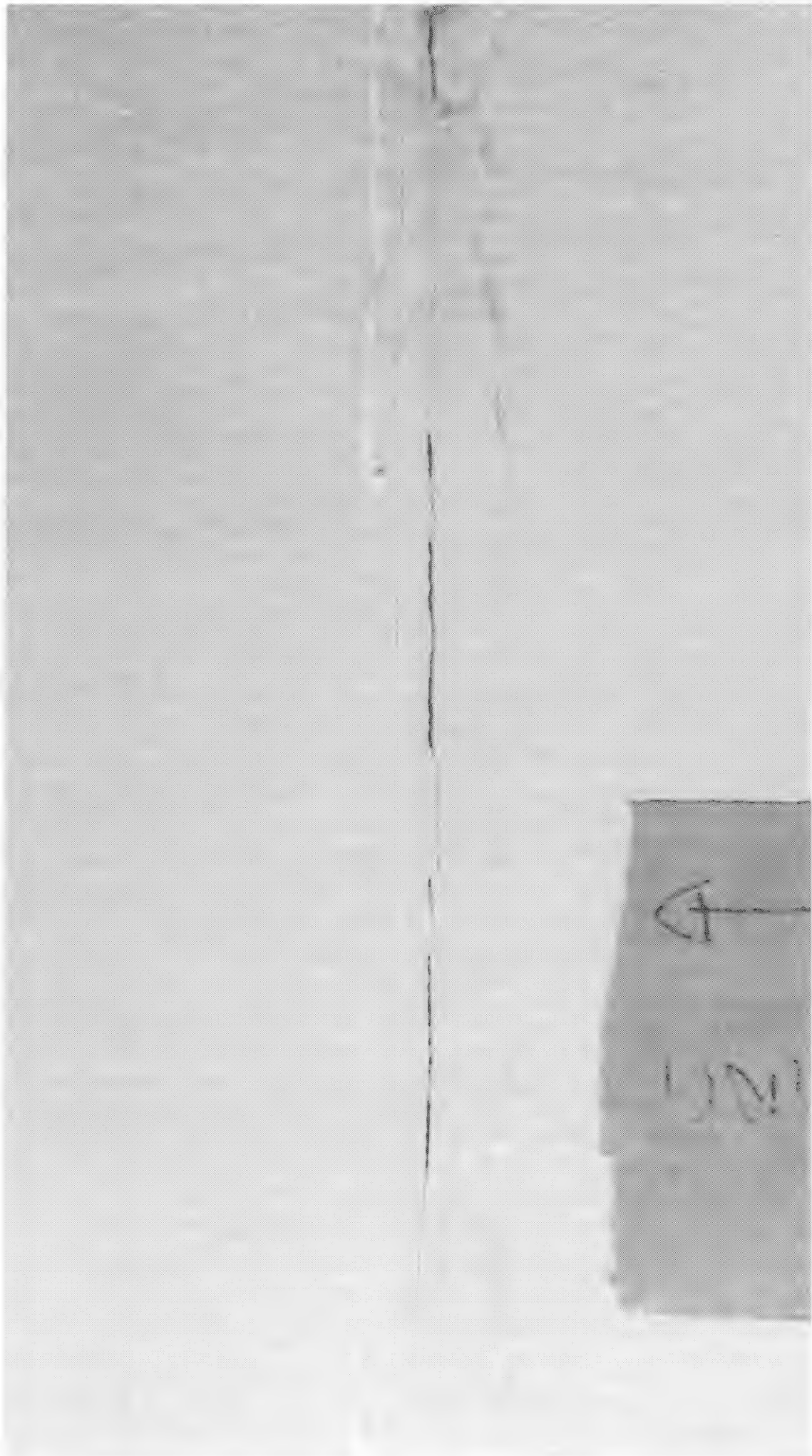
From: CCGS-NGCC, Bartlett Chief Engineer [<mailto:BartlettCE@ccgs-ngcc.gc.ca>]
Sent: February 9, 2018 12:27 PM
To: [REDACTED]
Subject: ACM bulkhead seam maintenance

Hi [REDACTED]

During our sea trial this morning our deck crew made a thorough inspection of our ACM bulkheads onboard. They noticed a few gaps/splits in the sealing caulk on some of the panel seams (see attached picture).
Would you recommend resealing with a bead of silicone caulking?

Thanks

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca



CCGS-NGCC, Bartlett Chief Engineer

From: [REDACTED]
Sent: February-09-18 9:40 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: Bartlett air results Feb 9
Attachments: 34741 AA1 V1.0 2018-02-09 - CCGS Bartlett Air Monitoring at Sea S#1-13.pdf

Hi Matt, please find attached the lab results from today's at sea testing. We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits.

Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer.

Please let me know if you have any questions.

Best,

[REDACTED]

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**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Air Monitoring At Sea

Date: February 09, 2018
Client Job or PO#: BARTLETT
Project number: 34741

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/ml)	v/v	LOQ	Comment
34741-1a	Feb-09-2018	Feb-09-2018	(AMB) Poop Deck Crew Lounge	AMB	JD	2.55	07:41	17:11	570	9.5	100	1453.5	12.10	<0.01	V	<	
34741-2a	Feb-09-2018	Feb-09-2018	(AMB) Poop Deck Alley (Location 5)	AMB	JD	2.56	07:52	17:28	576	5.5	100	1474.56	7.01	<0.01	V	<	
34741-3a	Feb-09-2018	Feb-09-2018	(AMB) Poop Deck Logistics Officer's Cabin	AMB	JD	2.56	07:56	17:35	579	2.5	100	1482.24	3.18	<0.01	W	<	
34741-4a	Feb-09-2018	Feb-09-2018	(AMB) Poop Deck Winchman's Cabin	AMB	JD	2.56	08:05	17:39	574	8.0	100	1469.44	10.19	<0.01	V	<	
34741-5a	Feb-09-2018	Feb-09-2018	(AMB) Upper Deck Alley FWD	AMB	JD	2.56	08:14	17:44	570	5.0	100	1459.2	6.37	<0.01	W	<	
34741-6a	Feb-09-2018	Feb-09-2018	(AMB) Upper Deck Alley AFT	AMB	JD	2.56	08:18	17:48	570	9.0	100	1459.2	11.46	<0.01	V	<	
34741-7a	Feb-09-2018	Feb-09-2018	(AMB) Upper Deck Alley Adjacent to Officer Cabin	AMB	JD	2.56	08:25	17:55	570	9.5	100	1459.2	12.10	<0.01	V	<	
34741-8a	Feb-09-2018	Feb-09-2018	(AMB) Boat Deck: Chief Officer's Cabin	AMB	JD	2.56	08:32	18:02	570	3.0	100	1459.2	3.82	<0.01	W	<	
34741-9a	Feb-09-2018	Feb-09-2018	(AMB) Boat Deck Alley	AMB	JD	2.56	08:40	18:10	570	4.5	100	1459.2	5.73	<0.01	W	<	
34741-10a	Feb-09-2018	Feb-09-2018	(AMB) Engine Deck: Control Room	AMB	JD	2.58	08:45	18:15	570	3.0	100	1470.6	3.82	<0.01	W	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34741-11a	Feb-09-2018	Feb-09-2018	(AMB) Engine Room	AMB	JD	2.56	14:10	18:30	260	2.0	100	665.6	2.55	<0.01	VV	<	
34741-12a	Feb-09-2018	Feb-09-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34741-13a	Feb-09-2018	Feb-09-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.


QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.


VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibres/mm2)

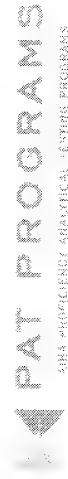
Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

 Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

 Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

2/2

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust
Wipe

Project: CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6441938
Client No.:34694-23b

Location: Engine Rm Deck-Engine Rm, Stbd
Engine (A)
Area (cm²): 100
Density (s/mm²): 12.8

Concentration (s/cm²): 881
Asbestos Type(s): Chrysotile

Lab No.:6441939
Client No.:34694-24b

Location: Engine Rm Deck-ER Btwn
Toolboxes, Aft (B)
Area (cm²): 100
Density (s/mm²): <7.69

Concentration (s/cm²): <1850
Asbestos Type(s): None Detected

Lab No.:6441940
Client No.:34694-25b

Location: Engine Rm Deck-Behind Wellxtrol
Tank, Port (C)
Area (cm²): 100
Density (s/mm²): 173

Concentration (s/cm²): 55500
Asbestos Type(s): Chrysotile

Lab No.:6441941
Client No.:34694-26b

Location: Engine Rm Deck-ER Top Of Service
Tank (D)
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <617
Asbestos Type(s): None Detected

Lab No.:6441942
Client No.:34694-27b

Location: Engine Rm Deck-MCR Top Of
Console (E)
Area (cm²): 100
Density (s/mm²): 897

Concentration (s/cm²): 28800
Asbestos Type(s): Chrysotile

Lab No.:6441943
Client No.:34694-28b

Location: Poop Deck-Recirculation Vent (F)
Area (cm²): 100
Density (s/mm²): <7.69

Concentration (s/cm²): <37000
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

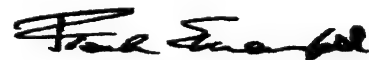
Date Received: 2/9/2018

Approved By:

Date Analyzed: 02/09/2018

Signature:

Analyst:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 2/9/2018 4:42:18

Page 1 of 4

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust
Wipe

Project: CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6441944
Client No.:34694-29b

Location: Engine Rm Deck-Engine Rm, Field
Blank (G)
Area (cm²): 100
Density (s/mm²): <15.4

Concentration (s/cm²): <1060
Asbestos Type(s): None Detected

Lab No.:6441945
Client No.:34694-30b

Location: Engine Rm Deck-Engine Rm, Process
Blank (H)
Area (cm²): 100
Density (s/mm²): <12.8

Concentration (s/cm²): <881
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

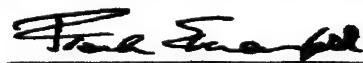
Date Received: 2/9/2018

Date Analyzed: 02/09/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 2/9/2018 4:42:19

Page 2 of 4



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
 201 - 415 Gorge Road East
 Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018
 Report No.: 557124 - TEM Dust Wipe
 Project: CCGS Bartlett: Background Testing
 Project No.: 34694

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
 Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 2/9/2018 4:42:19

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 2/9/2018
Report No.: 557124 - TEM Dust Wipe
Project: CCGS Bartlett: Background Testing
Project No.: 34694

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
 201 - 415 Gorge Road East
 Victoria BC V8T 2W1
 Client: NOR765

Report Date: 2/9/2018
 Report No.: 557124 - TEM Dust Wipe
 Project: CCGS Bartlett: Background Testing
 Project No.: 34694

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6441938
 Client No.:34694-23b
 Volume Filtered (mL):7
 Dilution Factor (mL):50
 Grid Openings:6
 Opening Area (mm²):0.013
 Area Analyzed (mm²):0.0780
 Sensitivity (s/mm²):12.8
 Detection Limit (s/cm²):881

Area Sampled (cm²):100
 Location:Engine Rm Deck-Engine Rm, Stbd Engine (A)
Asbestos Structures: 1
 Structures < 5 Microns: 1
 Structures ≥ 5 µm: None Detected
 Structure Density (s/mm²): 12.8
 Structure Concentration (s/cm²): 881
 Asbestos Type(s):
 Chrysotile

Filter Type:MCE
 Filter Size (mm²):962
 Pore Size (µm):0.45
Non-Asbestos Structures:None Detected
 Structure Density (s/mm²):<12.8
 Structure Concentration (s/cm²):<881
 Non-Asbestos Type(s):
 None Detected

Micrograph Number:
 EDXA Spectrum ID:

Lab No.:6441939
 Client No.:34694-24b
 Volume Filtered (mL):2
 Dilution Factor (mL):50
 Grid Openings:10
 Opening Area (mm²):0.013
 Area Analyzed (mm²):0.130
 Sensitivity (s/mm²):7.69
 Detection Limit (s/cm²):1850

Area Sampled (cm²):100
 Location:Engine Rm Deck-ER Btwn Toolboxes, Aft (B)
Asbestos Structures: None Detected
 Structures < 5 Microns: None Detected
 Structures ≥ 5 µm: None Detected
 Structure Density (s/mm²): <7.69
 Structure Concentration (s/cm²): <1850
 Asbestos Type(s):
 None Detected

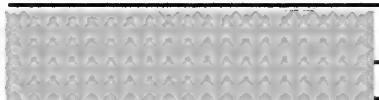
Filter Type:MCE
 Filter Size (mm²):962
 Pore Size (µm):0.45
Non-Asbestos Structures:None Detected
 Structure Density (s/mm²):<7.69
 Structure Concentration (s/cm²):<1850
 Non-Asbestos Type(s):
 None Detected

Micrograph Number:
 EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 2/9/2018
 Date Analyzed: 02/09/2018

Signature:
 Analyst:



Approved By:

Frank E. Ehrenfeld, III
 Laboratory Director

Dated : 2/9/2018 4:42:19

Page 1 of 5

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust
Wipe

Project: CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6441940
Client No.: 34694-25b

Volume Filtered (mL): 1.5
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 6170

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6441941
Client No.: 34694-26b

Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²): 100
Location: Engine Rm Deck-Behind Wellxtrol
Tank, Port (C)
Asbestos Structures: 9
Structures < 5 Microns: 9
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 173
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Chrysotile

Area Sampled (cm²): 100
Location: Engine Rm Deck-ER Top Of Service
Tank (D)
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <6170
Non-Asbestos Type(s):
None Detected

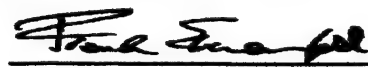
Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 2/9/2018
Date Analyzed: 02/09/2018

Signature:
Analyst:

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Dated : 2/9/2018 4:42:19

Page 2 of 5

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust
Wipe

Project: CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6441942
Client No.:34694-27b

Volume Filtered (mL):15
Dilution Factor (mL):50
Grid Openings:3
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0390
Sensitivity (s/mm²):25.6
Detection Limit (s/cm²):822

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6441943
Client No.:34694-28b

Volume Filtered (mL):0.1
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):37000

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:Engine Rm Deck-MCR Top Of
Console (E)

Asbestos Structures: 35

Structures < 5 Microns: 29
Structures ≥ 5 µm: 6
Structure Density (s/mm²): 897
Structure Concentration (s/cm²): 28800
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<25.6
Structure Concentration (s/cm²):<822
Non-Asbestos Type(s):
None Detected

Area Sampled (cm²):100
Location:Poop Deck-Recirculation Vent (F)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <37000
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):<37000
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 2/9/2018
Date Analyzed: 02/09/2018

Signature:
Analyst:



Approved By:

Frank E. Ehrenfeld, III

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 2/9/2018 4:42:19

Page 3 of 5

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust
Wipe

Project: CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6441944
Client No.:34694-29b

Volume Filtered (mL):7
Dilution Factor (mL):50
Grid Openings:5
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0650
Sensitivity (s/mm²):15.4
Detection Limit (s/cm²):1060

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6441945
Client No.:34694-30b

Volume Filtered (mL):7
Dilution Factor (mL):50
Grid Openings:6
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0780
Sensitivity (s/mm²):12.8
Detection Limit (s/cm²):881

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:Engine Rm Deck-Engine Rm, Field
Blank (G)
Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cm²): ≤1060
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<15.4
Structure Concentration (s/cm²):<1060
Non-Asbestos Type(s):
None Detected

Area Sampled (cm²):100
Location:Engine Rm Deck-Engine Rm, Process
Blank (H)
Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): ≤12.8
Structure Concentration (s/cm²): ≤881
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<12.8
Structure Concentration (s/cm²):<881
Non-Asbestos Type(s):
None Detected

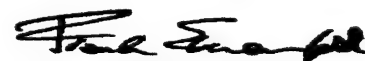
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 2/9/2018
Date Analyzed: 02/09/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 2/9/2018 4:42:19

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018
Report No.: 557124 - TEM Dust Wipe
Project: CCGS Bartlett: Background Testing
Project No.: 34694

201-415 Gorge Road E
Victoria, B.C. V8T 2W1



North West
Environmental Group Ltd.

Tel: 250-384-9695
Fax: 250-384-9865
E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard
25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Wheelhouse and Consoles
25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 4-5 2018
Address of the abatement project	CCGS Bartlett – Wheelhouse and Consoles 25 Huron Street, Victoria BC
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"

Contractor Scope of Work:

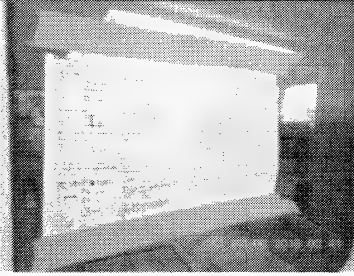
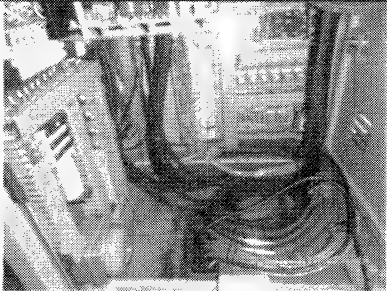
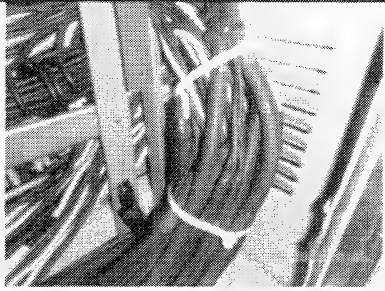
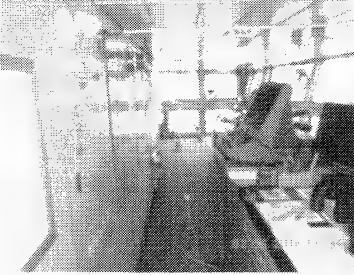


Remove asbestos-containing dust from all accessible surfaces within all consoles. Clean all exposed surfaces in the Wheelhouse. Moderate risk clean-up of dusty surfaces.

NOTE 1: the intent of this work was not to remove all observable dust, but to remove all accessible, loosely adhered gross contamination from within the consoles and to clean all surfaces in the Wheelhouse in order to reduce the amount of loose material that may be rendered airborne during normal vessel operations. Abatement workers were required to gently vacuum cables and electrical components within the consoles; they were not permitted to handle cables beyond this to remove concealed dust.

NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.



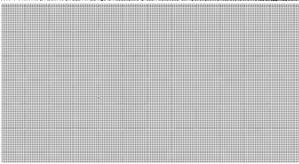

North West
Environmental Group Ltd.

Photo Plate	
	
Photo of NOPA posted on work site.	Example of dust cleaned from a console.
	
Example of dust removed from a console.	Example of cleaned surfaces in the Wheelhouse
	
Photo of sampling location.	Photo of sampling location.
Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	Kyle Ostman, Technologist
<p>Asbestos-containing cables were discovered in the Wheelhouse consoles, triggering NWest to assess the latent dust. NWest collected surface wipe samples and found the dust to contain asbestos. The consoles are regularly accessed and are open to the Wheelhouse (i.e. share an air space), therefore, cleaning of the consoles was undertaken to reduce the risk of fibres becoming airborne during normal vessel operations.</p> <p>NWest conducted a Final Visual Inspection and clearance sampling. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".</p>	
<p>Air Samples</p> <p>Worker breathing zone (Occupational) samples and Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities which have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).</p> <p>WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.</p>	

Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699
Date: February 8, 2018

Wheelhouse air samples: Occupationalss – 34699-1 and 34699-2. Air clearances – 34699-11 and 34699-12. Field blanks – 34699-3, 4, and 9.

Name and signature of the consultant who collected the air clearance samples	 Technologist
Reviewed by	 Senior Project Manager Qualified Person as per OHS Reg 6.1


APPENDIX A – Field Reports

No information has been removed or severed from this page



ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

 North West Environmental Group Ltd.		ASBESTOS ABATEMENT CHECKLIST FINAL VISUAL INSPECTION CHECKLIST (FOR USE BY THE INDUSTRIAL HYGIENIST)	
Date: <i>Feb 6, 2018</i>	Time: <i>0910</i>	Contractor: <i>Canadian Hermit</i>	Inspector: <i>K.O.</i>
Site:		Present at Inspection: <i>K.O. (NWest)</i> <i>Rob (Canadian Hermit)</i>	
Project:	<i>Bar/ktc Dust Abatement</i>		
Location:		Inspection Report No.: <i>1, 2.</i>	
1) <i>Wheelhouse</i> 2) <i>Laundry Room</i>			
Number of Inspection (prior to passing): <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5			
Comments: <i>Wheelhouse required some cleaning on upper ledge of interior cabinets.</i>		Verified to be Complete by Contractor (Initial of Sup't) Checked by Representative of Building Owner	
		Yes (Y)	No (N)
General			
Is all equipment removed from area?		<input checked="" type="checkbox"/>	
Is all asbestos within scope removed?		<input checked="" type="checkbox"/>	
All ACM Waste removed from area?		<input checked="" type="checkbox"/>	
Is area ready for barriers to be removed to critical barriers?		<input checked="" type="checkbox"/>	
Is load-out, decon, and equipment room free of debris and waste?		<input checked="" type="checkbox"/>	
Is area ready for encapsulation?			NA
Do Negative Air Machines have sufficient DOP tests?		<input checked="" type="checkbox"/>	NA
Enclosure			
Negative pressure (where applicable) at min. -0.03 in.w.g.			NA
All enclosures intact and properly sealed		<input checked="" type="checkbox"/>	
Space vacuumed with certified HEPA vacuum only		<input checked="" type="checkbox"/>	
Poly wiped clean (free from removable residue)		<input checked="" type="checkbox"/>	
Negative air machine (where applicable) wiped down			NA
Discharge hoses clean and free of perforations			NA
All waste removed from space		<input checked="" type="checkbox"/>	
Remaining tools and equipment wiped down or bagged		<input checked="" type="checkbox"/>	NA *
Dust and Debris: Vertical and horizontal surfaces			
Window sills and tracks		<input checked="" type="checkbox"/>	
Walls and doors		<input checked="" type="checkbox"/>	

* Dust remains in areas difficult to reach.
* Pending AC results.



North West Environmental Group Ltd.

**ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.**

September 2016

Tops of baseboards			NA	
Tops of doors, hinges and frames		✓		
Door frames pockets		✓		
Wall mounted fixtures		✓		
Floors including all corners and spaces behind doors		✓		



North West
Environmental Group Ltd.

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Form: IC1.V0.A-12/10/16

000628

**ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.**

September 2016

OBSERVATIONS	RECOMMENDATIONS/ INSTRUCTIONS	DATE RECTIFIED/ INSPECTOR'S INITIALS
1. Location: wheel house		
a. Upper ledge of cabinet inferior doors are retaining dust.	▪ Re clean these areas. - Rectified on site	K.O.
b. Carpets free of dust and debris. - all surfaces are dust free	▪	K.O.
c.	▪	
2. Location: Laundry Room		
a. Area is dust + debris free.	▪	K.O.
b. Laundry machines have been returned to position	▪	K.O.
c.	▪	
3. Location:		
d.	▪	
e.	▪	
f.	▪	
4. Location:		
a.	▪	
b.	▪	
c.	▪	



Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX B – Analytical Results

No information has been removed or severed from this page



North West
Environmental Group Ltd.



North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 06, 2018

Client Job or PO#: NEED

Project number: 34699

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-1a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	13:51	14:21	30	13.0	100	76.2	16.56	0.084	V	<	Jason, Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-2a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	15:10	16:10	60	1.0	100	152.4	1.27	<0.01	W	<	Rob, Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-3a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-4a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34699-5a	Feb-06-2018	Feb-06-2018	(AC1 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	2.0	100	2456.26	2.55	<0.01	W	<	

As per WSPC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-6a	Feb-06-2018	Feb-06-2018	(AC2 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	1.0	100	2456.26	1.27	<0.01	VV	<	
34699-9a	Feb-06-2018	Feb-06-2018	(QC) Field Blank 1	QC	JD	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
34699-11a	Feb-06-2018	Feb-06-2018	(AC5 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	7.5	100	2441.4	9.55	<0.01	V	<	
34699-12a	Feb-06-2018	Feb-06-2018	(AC6 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	4.0	100	2441.4	5.10	<0.01	VV	<	

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

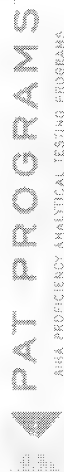
Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

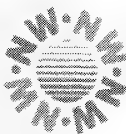
Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

2/2



North West
Environmental Group Ltd.

201-415 Gorge Road E
Victoria, B.C. V8T 2W1

Tel: 250-384-9695

Fax: 250-384-9865

E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard

25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Laundry Room

25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 5, 2018
Address of the abatement project	CCGS Bartlett – Laundry Room 25 Huron Street, Victoria BC
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"

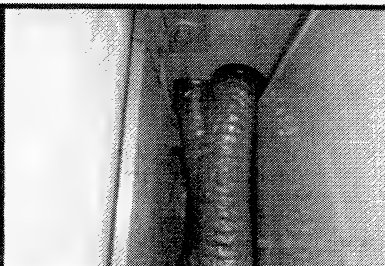
Contractor Scope of Work:

Remove asbestos-containing dust from all surfaces behind the washing machines and dryers. Clean all exposed surfaces in the laundry room. Moderate risk clean up of less than 5 square meters of dusty surfaces.

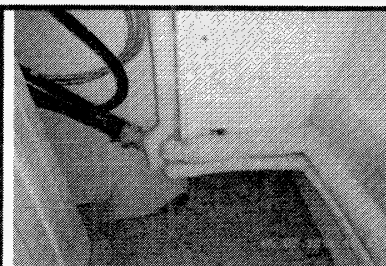
Photo Plate



Photo of entrance into the Landry Room. Popup enclosure was used to create a larger work space.




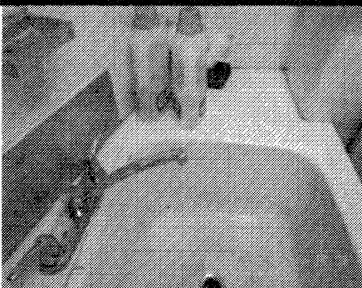
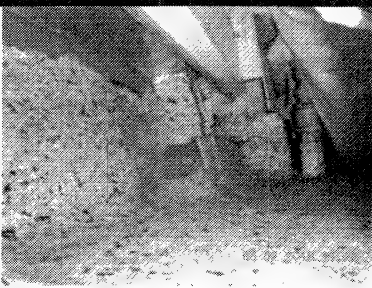
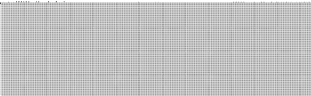

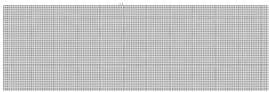

Example of dust cleaned from behind units.



Example of dust removed from the work area.



North West
Environmental Group Ltd.

		
Example of dust removed from the work area.	Example of Laundry Room exposed surface cleaned of dust.	Example of the deck beneath the units cleaned of dust.
Notice of Project — Asbestos	NOPA E768383	
Waste manifest documentation	BP16288-2	
Consultant that performed the final visual inspection	Brian Salmon, Technologist	
<p>This space was originally cleaned following the discovery of a crack in the asbestos-containing bulkhead panel under the porthole. The abatement contractor cleaned all accessible surfaces, including inside cupboards following moderate risk procedures. Dust was observed behind the washers and driers, which are fastened into place, rendering this dust inaccessible. NWest conducted surface wipe sampling and found the dust to contain asbestos, warranting additional efforts to remove it.</p> <p>NWest conducted a Final Visual Inspection and clearance air sampling. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".</p>		
<p>Air Samples</p> <p>Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities. These have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).</p> <p>WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.</p> <p>Laundry Room clearance samples: 34699-5 and 34699-6. Field blank: 34699-9.</p>		
Name and signature of the consultant who collected the air clearance samples	  Technologist	
Reviewed by	  Senior Project Manager Qualified Person as per OHS Reg 6.1	



North West
Environmental Group Ltd.

ASBESTOS ABATEMENT CHECKLIST
FINAL VISUAL INSPECTION CHECKLIST
(FOR USE BY THE ENVIRONMENTAL CONSULTANT)

Date: Feb 5, 2018		Project number: 34699	
Time on/off site: 1:45pm	NWest representative(s): B. Salmon		
Report number: 34699	Site address/location: 25 Huron St. C655 Bartlett		
Weather: Clear	Contractor/Representative Name: Canadian Hot Flat		
Client and contact name: [REDACTED]	Number of abatement workers on site: 6		
Volume of Containment: small	Number of negative air units in use: 0		
Work Zone Location: Laundry Rm			
RESULTS:	FAILED or PASSED. See observations and instructions below.		

Number of Inspection (prior to passing): ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5

Checked by Representative of Building Owner

General	Yes (Y)	No (N)	Observations
All equipment removed from area	✓		
All asbestos within scope removed from the substrate		✓	Reconnected white on-site
All ACM Waste removed from containment	✓		
Area is ready for barriers to be removed	✓		Upon Air Clearance

Checked by Representative of Building Owner

Enclosure	Yes (Y)	No (N)	Observations
Decontamination chambers free of dust, debris and waste	✓		
Area ready for encapsulation			NA
Negative Air Machines have sufficient DOP tests			NA
Negative pressure (where applicable) at min. -0.03 in.w.g.			NA
All enclosures intact and properly sealed	✓		
Space vacuumed with certified HEPA vacuum only	✓		
Poly wiped clean (free from removable residue)	✓		

Enclosure	Yes (Y)	No (N)	Observations
Negative air machine (where applicable) wiped down			N/A
Discharge hoses clean and free of perforations			N/A
All waste removed from space	✓		
Remaining tools and equipment wiped down or bagged	✓		
Window sills and tracks free from debris	✓		
Walls and doors free from dust and debris	✓		
Tops of baseboards free from dust and debris	✓		
Tops of doors, hinges and frames free from dust and debris	✓		
Door frame pockets free from dust and debris	✓		
Wall/Ceiling mounted fixtures free from dust and debris		✓	Reconnected on-site
Floors including scaffolding walk boards free from dust and debris		✓	" "
Instructions for Contractor:			Contractor Representative Signature:
1.	Clean corners behind pipes		
2.	Re-wipe laundry tray and tops of machines		
3.			
4.			

END OF DOCUMENT



Canadian Coast Guard
CCGS Bartlett – Laundry Room

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX A – Field Reports

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Canadian Coast Guard
CCGS Bartlett – Laundry Room

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX B – Analytical Results

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North West Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1
Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Dust Abatement Monitoring
Date: February 06, 2018
Client Job or PO#: NEED
Project number: 34699

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-1a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	13:51	14:21	30	13.0	100	76.2	16.56	0.084	V	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-2a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	15:10	16:10	60	1.0	100	152.4	1.27	<0.01	VV	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-3a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-4a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34699-5a	Feb-06-2018	Feb-06-2018	(AC1 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	2.0	100	2456.26	2.55	<0.01	VV	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vw	LOQ	Comment
34699-6a	Feb-06-2018	Feb-06-2018	(AC2 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	1.0	100	2456.26	1.27	<0.01	VW	<	
34699-9a	Feb-06-2018	Feb-06-2018	(QC) Field Blank 1	QC	JD	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
34699-11a	Feb-06-2018	Feb-06-2018	(AC5 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	7.5	100	2441.4	9.55	<0.01	V	<	
34699-12a	Feb-06-2018	Feb-06-2018	(AC6 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	4.0	100	2441.4	5.10	<0.01	VW	<	

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibres/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



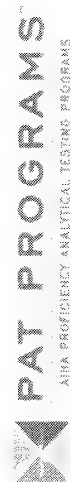
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Canadian Coast Guard
CCGS Bartlett – Laundry Room

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

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WORK SAFE BC

WORKING TO MAKE A DIFFERENCE

Notice of ProjectNOP Confirmation number: **E768383****Owner information**

Account #:
Name: **Victoria Coast Guard Base**
Country: **Canada**
Address: **25 Huron Street**

City: **Victoria**
Province: **British Columbia**
Postal code:

Prime contractor or employer information

Account #:
Name:
Country: **Canada**
Address:

City:
Province: **British Columbia**
Postal code:

Person in charge of project

Name:
Job title: **Operations Manager**
Email: **info@haz-mat.ca**
Phone number: **(250) 891-8611** Ext:

Person completing this form

Name:
Email: **info@haz-mat.ca**
Phone number: **(250) 891-8611** Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?**Required documents and additional information to be submitted**

Additional documents: **Yes**
Delivery method: **E-Mail**
Sent date: **2018/02/01**

NOP Confirmation number: **E768383****Asbestos, Lead or Other Similar Exposure Work Activity**Asbestos, lead or other similar exposure work activity (**OH&S Regulation 20.2.1**) - At least **48 hours** notice required.**Employer responsible for the work involving asbestos, lead or other similar exposure work activity**

Account #: **968887**
Name: **Canadian HAZ-MAT Environmental Ltd**
Country: **Canada**
Address: **1111 Tulip Ave**

City: **Victoria**
Province: **British Columbia**
Postal code: **V8Z 7Z2**

Consulting firmsName(s): **Northwest Environmental****Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity**

Attachments: **Yes**
Delivery method: **E-Mail**
Sent date: **2018/02/01**

Planned activity for a building or structure that contains asbestos materials or where asbestos-containing material has been processed, manufactured or stored

Demolition:
Repair: **Yes**

Hours of work

Hours of work from: **08:00**

Hours of work to: **16:00****Number of workers per shift**Total: **3**Renovation or
alteration:
Encapsulation:**Activity type involving asbestos-containing material**Removal: **Yes**
Enclosure:
Encapsulation: **Yes****Asbestos Work Activity Level**Risk level is: **Moderate****Lead project information (required only when completing a lead project)**

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: **E768383****Project site locations**

Site Location	Start date	Project city	Duration	Unit	Project site location
1	2018/02/04	Victoria	3	Days	Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email: prevnop@WorkSafeBC.com
(if your attachments are over 10 MB, send multiple emails or email us for further instructions)

Fax: 604.276.3247

Mailing address: WorkSafeBC, Prevention Division
PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone: 604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email: prevnop@WorkSafeBC.com

201-415 Gorge Road E
Victoria, B.C. V8T 2W1



North West
Environmental Group Ltd.

Tel: 250-384-9695
Fax: 250-384-9865
E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard
25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Void Space Under Wheelhouse
25 Huron Street, Victoria, BC.



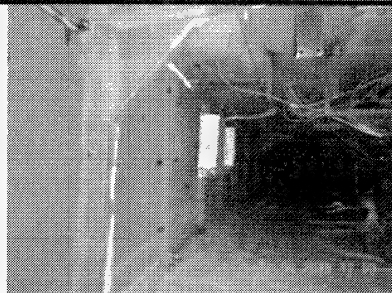
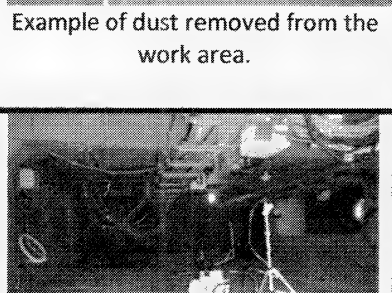
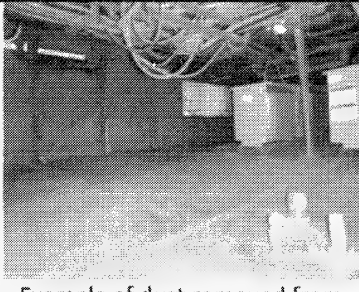
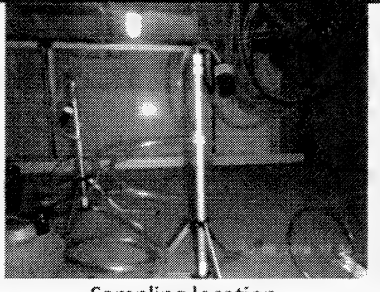
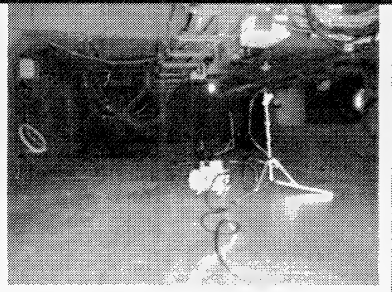
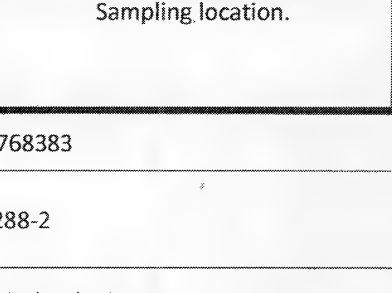
North West Environmental Group Ltd (NWest) Scope of Work:

- Collect occupational samples in personal breathing zone of workers during cleaning activities.
- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 7, 2018
Address of the abatement project	CCGS Bartlett – Void Space Under Wheelhouse 25 Huron Street, Victoria BC
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"
Contractor Scope of Work: Remove asbestos-containing dust from all accessible surfaces. Remove exposed fibrous insulation. Moderate risk clean-up of dusty surfaces. Cables were not handled to remove dust concealed between cables. NOTE: Bundled cables are not free of asbestos-containing materials or dust. Asbestos-containing cables may still be present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working with cable bundles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.	

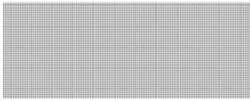

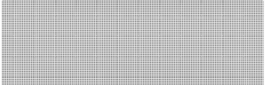



North West
Environmental Group Ltd.

Photo Plate	
	
Negative air unit venting to exterior of ship.	Example of dust cleaned from the surface of cables.
	
Example of dust removed from the work area.	Example of dust removed from the work area.
	
Example of dust removed from the work area. Exposed fibrous insulation removed.	Sampling location.
	
Sampling location.	Sampling location.
Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	Kyle Ostman, Technologist
<p>The presence of asbestos containing cables and dust was found in the Wheelhouse consoles. Some consoles have unsealed penetrations into the Void space, effectively sharing the same air space. Asbestos-containing cables may be present in the Void space.</p> <p>NWest conducted occupational sampling, a final clearance inspection, and final visual inspection. The work was conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".</p>	
<p>Air Samples</p> <p>Occupational and Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Powered Air Purifying Respirators (PAPRs) were used during asbestos abatement activities which have a maximum use concentration of 10 fibres/cubic centimetre of air (f/cc).</p> <p>WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.</p>	

Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699
Date: February 9, 2018

Void Space air samples: Occupational – 34699-23 and 34699-24. Air clearances – 34699-28, 29, and 31. Field blanks – 34699-27 and 34699-30.	
Name and signature of the consultant who collected the air clearance samples	  Technologist
Reviewed by	  Senior Project Manager Qualified Person as per OHS Reg 6.1



North West
Environmental Group Ltd.

APPENDIX A – Field Reports

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North West
Environmental Group Ltd.

ASBESTOS ABATEMENT CHECKLIST
FINAL VISUAL INSPECTION CHECKLIST
(FOR USE BY THE ENVIRONMENTAL CONSULTANT)

Date: Feb 8, 2018

Project number: 34699

Time on/off site:	13:50	NWest representative(s):	HO
Report number:	5	Site address/location:	CCG - Bartlett
Weather:	Windy, Sunny	Contractor/Representative Name:	NA pers on site
Client and contact name:	CCG - Bartlett Hatt	Number of abatement workers on site:	was 3
Volume of Containment:	< 540 m ³	Number of negative air units in use:	1
Work Zone Location:	Void space under ceiling		
RESULTS:	FAILED or PASSED. See observations and instructions below.		

Number of Inspection (prior to passing): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Checked by Representative of Building Owner

General	Yes (Y)	No (N)	Observations
All equipment removed from area	✓		
All asbestos within scope removed from the substrate	✓		
All ACM Waste removed from containment	✓		
Area is ready for barriers to be removed	✓		area is cleared

Checked by Representative of Building Owner

Enclosure	Yes (Y)	No (N)	Observations
Decontamination chambers free of dust, debris and waste	✓		Space is clear.
Area ready for encapsulation			NA
Negative Air Machines have sufficient DOP tests	✓		
Negative pressure (where applicable) at min. -0.03 in.w.g			NA
All enclosures intact and properly sealed	✓		
Space vacuumed with certified HEPA vacuum only	✓		
Poly wiped clean (free from removable residue)	✓		

Enclosure	Yes (Y)	No (N)	Observations
Negative air machine (where applicable) wiped down		✓	outside
Discharge hoses clean and free of perforations			NA, outside
All waste removed from space	✓		
Remaining tools and equipment wiped down or bagged		✓	none in space
Window sills and tracks free from debris			NA
Walls and doors free from dust and debris	✓		
Tops of baseboards free from dust and debris			NA
Tops of doors, hinges and frames free from dust and debris	✓		
Door frame pockets free from dust and debris	✓		
Wall/Ceiling mounted fixtures free from dust and debris			NA some dust in difficult to reach areas.
Floors including scaffolding walk boards free from dust and debris	✓		
Instructions for Contractor:			Contractor Representative Signature:
1. Space is clean and free of debris insulation has been removed from walls			
2.			
3.			
4.			

END OF DOCUMENT



Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699
Date: February 9, 2018

APPENDIX B – Analytical Results

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North West
Environmental Group Ltd.

s.19(1)



201 - 415 Gorge Road East
Victoria, BC V8T 2W1
Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Dust Abatement Monitoring
Date: February 09, 2018
Client Job or PO#: NEED
Project number: 34699

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
34699-1a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	13:51	14:21	30	13.0	100	76.2	16.56	0.084	V	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-2a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	15:10	16:10	60	1.0	100	152.4	1.27	<0.01	W	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-3a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-4a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34699-5a	Feb-06-2018	Feb-06-2018	(AC1 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	2.0	100	2456.26	2.55	<0.01	W	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314
1/3

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/w	LOQ	Comment
34699-6a	Feb-06-2018	Feb-06-2018	(AC2 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	1.0	100	2456.26	1.27	<0.01	W	<	
34699-9a	Feb-06-2018	Feb-06-2018	(QC) Field Blank 1	QC	JD	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
34699-11a	Feb-06-2018	Feb-06-2018	(AC5 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	7.5	100	2441.4	9.55	<0.01	V	<	
34699-12a	Feb-06-2018	Feb-06-2018	(AC6 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	4.0	100	2441.4	5.10	<0.01	W	<	
34699-19a	Feb-07-2018	Feb-08-2018	(AC5 PCM) MCR Stores	AC	JD	12.04	10:10	13:10	180	18.5	100	2167.2	23.57	<0.01	V	<	
34699-20a	Feb-07-2018	Feb-08-2018	(AC6 PCM) MCR Stores	AC	JD	12.04	10:10	13:10	180	14.5	100	2167.2	18.47	<0.01	V	<	
34699-21a	Feb-07-2018	Feb-08-2018	(AC7 PCM) MCR Panel Control	AC	JD	12.04	10:10	13:10	180	18.0	100	2167.2	22.93	<0.01	V	<	
34699-22a	Feb-07-2018	Feb-08-2018	(AC8 PCM) MCR Control Panel	AC	JD	12.04	10:10	13:10	180	18.5	100	2167.2	23.57	<0.01	V	<	
34699-23a	Feb-07-2018	Feb-08-2018	(OCC) Void Space of Bartlett	OCC	JD	2.6	10:40	11:10	30	5.5	100	78	7.01	0.035	V	<	PAPR / Wiping and Vacuuming Surfaces
34699-24a	Feb-07-2018	Feb-08-2018	(OCC) Void Space of Bartlett	OCC	JD	2.6	10:40	11:40	60	7.5	100	156	9.55	0.024	V	<	PAPR / Wiping and Vacuuming Surfaces
34699-26a	Feb-07-2018	Feb-08-2018	(QC PCM) MCR	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-27a	Feb-07-2018	Feb-08-2018	(QC) FB OCC	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-28a	Feb-08-2018	Feb-08-2018	(AC1) Voidspace Below Wheelhouse	AC	BR	16.44	13:53	16:10	137	1.0	100	2252.28	1.27	<0.01	W	<	
34699-29a	Feb-08-2018	Feb-08-2018	(AC2) Voidspace Below Wheelhouse	AC	BR	16.43	13:57	N/A	N/A	0.0	100	N/A	N/A	N/A			Filter Blow Out, No Result Possible
34699-30a	Feb-08-2018	Feb-08-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34599-31a	Feb-08-2018	Feb-08-2018	(AC3) Voidspace Below Wheelhouse	AC	BR	13.26	13:57	16:59	182	1.0	100	2413.32	1.27	<0.01	VV	<	

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.


QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.


W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

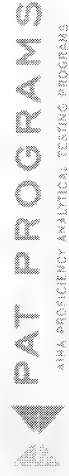
Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

 Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

 Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

3/3

Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699
Date: February 9, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

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North West
Environmental Group Ltd.

2/1/2018

WorkSafeBC Online - Notice of Project



WORKING TO MAKE A DIFFERENCE

Notice of Project

NOP Confirmation number: **E768383**

Owner information

Account #:
 Name: **Victoria Coast Guard Base**
 Country: **Canada**
 Address: **25 Huron Street**

 City: **Victoria**
 Province: **British Columbia**
 Postal code:

Prime contractor or employer information

Account #:
 Name:
 Country: **Canada**
 Address:

 City:
 Province: **British Columbia**
 Postal code:

Person in charge of project

Name: [REDACTED]
 Job title: **Operations Manager**
 Email: **info@haz-mat.ca**
 Phone number: **(250) 891-8611** Ext:

Person completing this form

Name: [REDACTED]
 Email: **info@haz-mat.ca**
 Phone number: **(250) 891-8611** Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents: **Yes**
 Delivery method: **E-Mail**
 Sent date: **2018/02/01**

NOP Confirmation number: **E768383**

Asbestos, Lead or Other Similar Exposure Work Activity

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #: **968887**
 Name: **Canadian HAZ-MAT Environmental Ltd**
 Country: **Canada**
 Address: **1111 Tulip Ave**

 City: **Victoria**
 Province: **British Columbia**
 Postal code: **V8Z 7Z2**

Consulting firms

Name(s): **Northwest Environmental**

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments: **Yes**
 Delivery method: **E-Mail**
 Sent date: **2018/02/01**

Planned activity for a building or structure that contains asbestos materials or where asbestos-containing material has been processed, manufactured or stored

Demolition:
 Repair: **Yes**

Hours of work

Hours of work from: **08:00**

Hours of work to: **16:00**Number of workers per shift
Total: **3**Renovation or
alteration:
Encapsulation:**Activity type involving asbestos-containing material**Removal: **Yes**
Enclosure:
Encapsulation: **Yes****Asbestos Work Activity Level**Risk level is: **Moderate****Lead project information (required only when completing a lead project)**

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: **E768383****Project site locations**

Site Location	Start date	Project city	Duration	Unit	Project site location
1	2018/02/04	Victoria	3	Days	Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email: prevnop@WorkSafeBC.com
(if your attachments are over 10 MB, send multiple emails or email us for further instructions)

Fax: 604.276.3247

Mailing address: WorkSafeBC, Prevention Division
PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone: 604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email: prevnop@WorkSafeBC.com

201-415 Gorge Road E
Victoria, B.C. V8T 2W1



North West
Environmental Group Ltd.

Tel: 250-384-9695
Fax: 250-384-9865
E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard
25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Machinery Control Room (MCR) Stores and MCR Console.
25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 7, 2018
Address of the abatement project	CCGS Bartlett – MCR Console and MCR Stores 25 Huron Street, Victoria BC
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"

Contractor Scope of Work

MCR Console:

Remove asbestos-containing dust from all accessible surfaces within the console. Cut asbestos-containing cables at the opening of the conduit from the engines and seal the openings. Bag and remove the cables as asbestos waste. Clean the exterior of the console casing. Moderate risk clean-up of dusty surfaces.

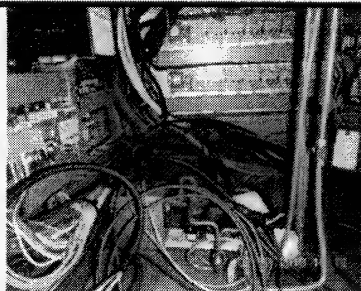
NOTE 1: the intent of this work was not to remove all observable dust, but to remove all accessible, loosely adhered gross contamination from within the consoles and to clean all surfaces in the MCR in order to reduce the amount of loose material that may be rendered airborne during normal vessel operations. Abatement workers were required to gently vacuum cables and electrical components within the consoles; they were not permitted to handle cables beyond this to remove concealed dust.

NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.

MCR Store:

Remove asbestos-containing rope gasket/packing from the storage room. Clean all surfaces on the shelving unit following moderate risk procedures.

Photo Plate



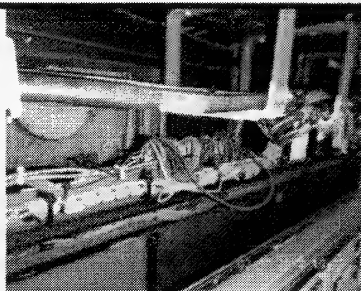
MCR: Accessible surfaces in console cleaned.



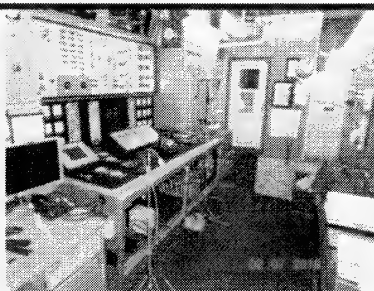
MCR: Example of conduit opening. Asbestos-containing cables removed and the conduit opening sealed.



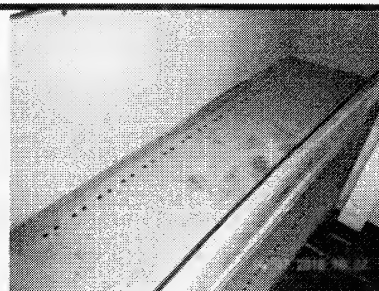
MCR: Deck and first foot of cables behind the console were cleaned.



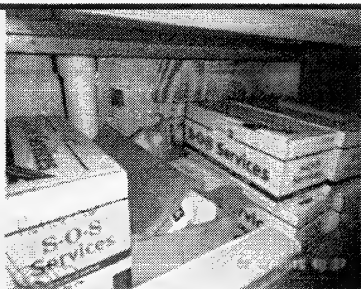
MCR: Accessible surfaces in backside of console cleaned.



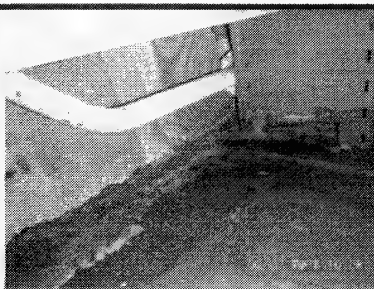
MCR: Air clearance samples.



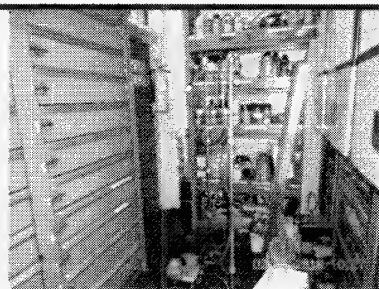
MCR Stores: Asbestos-containing materials removed and shelving cleaned.



MCR Stores: Boxes and other materials to remain were vacuumed.



MCR Stores: Deck beneath shelving cleaned.



MCR Stores: Air clearance samples.

Notice of Project — Asbestos

NOPA E768383

Waste manifest documentation

BP16288-2

Consultant that performed the final visual inspection

Technologist

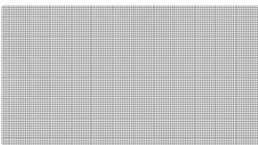
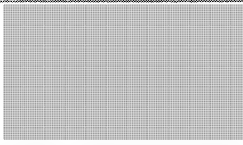
Bulk sample of stored gaskets identified asbestos-containing rope gasket/packing materials. The asbestos-containing gaskets have been exposed in the MCR Stores for an unknown length of time. This warranted efforts to remove all dust and debris from MCR Stores and MCR Console area.

NWest conducted a final clearance inspection and Final Visual Inspection. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities which have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).

WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.


Name and signature of the consultant who collected the air clearance samples	 Technologist
Reviewed by	 Senior Project Manager Qualified Person as per OHS Reg 6.1

APPENDIX A – Field Reports

No information has been removed or severed from this page

ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

 North West Environmental Group Ltd.		ASBESTOS ABATEMENT CHECKLIST FINAL VISUAL INSPECTION CHECKLIST (FOR USE BY THE INDUSTRIAL HYGIENIST)	
Date: Feb 7, 2018	Time: 1000.	Contractor: Canadian Hazard	Inspector: K.O.
Site: Barlett CCA		Present at Inspection: K.O. + [redacted]	
Project: Barlett Asst. Abate. + air mon. Port.	Submitted to:		
Location: 1) HEP Control Panel 2) HEP Stairs	Inspection Report No.: 13, 4		
Number of Inspection (prior to passing): <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5			
Comments: Space of Stairs + control panel are connected.	Verified to be Complete by Contractor (Initial of Sup't)	Checked by Representative of Building Owner	
		Yes (Y)	No (N)
General			
Is all equipment removed from area?		✓	
Is all asbestos within scope removed?		✓	
All ACM Waste removed from area?		✓	
Is area ready for barriers to be removed to critical barriers?			N/A
Is load-out, decon, and equipment room free of debris and waste?		✓	
Is area ready for encapsulation?			NA
Do Negative Air Machines have sufficient DOP tests?			NA
Enclosure			
Negative pressure (where applicable) at min. -0.03 in.w.g.			NA
All enclosures intact and properly sealed		✓	
Space vacuumed with certified HEPA vacuum only		✓	
Poly wiped clean (free from removable residue)			NA
Negative air machine (where applicable) wiped down			NA
Discharge hoses clean and free of perforations			NA
All waste removed from space		✓	
Remaining tools and equipment wiped down or bagged			NA
Dust and Debris: Vertical and horizontal surfaces			
Window sills and tracks			
Walls and doors			

no barriers.
no decon.

NA
-space is cleared visually
dust and debris free.
Panels on control panel are removed for inspection



North West
Environmental Group Ltd.

Page 1 of 3

Form: IC1.V0.A-12/10/16

000661

ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

Tops of baseboards			NA
Tops of doors, hinges and frames		✓	
Door frames pockets		✓	
Wall mounted fixtures		✓	
Floors including all corners and spaces behind doors		✓	

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North West
Environmental Group Ltd.

Page 2 of 3

Form: IC1.V0.A-12/10/16

000662

September 2016

OBSERVATIONS	RECOMMENDATIONS/ INSTRUCTIONS	DATE RECTIFIED/ INSPECTOR'S INITIALS
1. Location: <i>Mech Control Panel - Bartlett</i>		
a. <i>Space is clean. panel has been thoroughly clean</i>	▪ <i>free of dust + debris.</i>	<i>K.O.</i>
b.	▪	
c.	▪	
2. Location: <i>Mech Store Room - Bartlett</i>		
a. <i>Same as above. Shelf items have been removed free of dust + debris.</i>	▪	
b.	▪	
c.	▪	
3. Location: <i>Engine Room - Cables - Bartlett</i>		
d. <i>Cable ends have been capped + taped. free of dust + debris.</i>	▪	<i>K.O.</i>
e.	▪	
f.	▪	
4. Location:		
a.	▪	
b.	▪	
c.	▪	



Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX B – Analytical Results

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North West
Environmental Group Ltd.

s.19(1)



North West Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 08, 2018
Client Job or PO#: NEED
Project number: 34699

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-1a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	13:51	14:21	30	13.0	100	76.2	16.56	0.084	V	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-2a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	15:10	16:10	60	1.0	100	152.4	1.27	<0.01	W	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-3a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-4a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34699-5a	Feb-06-2018	Feb-06-2018	(AC1 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	2.0	100	2456.26	2.55	<0.01	W	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-6a	Feb-06-2018	Feb-06-2018	(AC2 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	1.0	100	2456.26	1.27	<0.01	W	<	
34699-9a	Feb-06-2018	Feb-06-2018	(QC) Field Blank 1	QC	JD	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
34699-11a	Feb-06-2018	Feb-06-2018	(AC5 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	7.5	100	2441.4	9.55	<0.01	V	<	
34699-12a	Feb-06-2018	Feb-06-2018	(AC6 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	4.0	100	2441.4	5.10	<0.01	W	<	
34699-19a	Feb-07-2018	Feb-08-2018	(AC5 PCM) MCR Stores	AC	JD	12.04	10:10	13:10	180	18.5	100	2167.2	23.57	<0.01	V	<	
34699-20a	Feb-07-2018	Feb-08-2018	(AC6 PCM) MCR Stores	AC	JD	12.04	10:10	13:10	180	14.5	100	2167.2	18.47	<0.01	V	<	
34699-21a	Feb-07-2018	Feb-08-2018	(AC7 PCM) MCR Panel Control	AC	JD	12.04	10:10	13:10	180	18.0	100	2167.2	22.93	<0.01	V	<	
34699-22a	Feb-07-2018	Feb-08-2018	(AC8 PCM) MCR Control Panel	AC	JD	12.04	10:10	13:10	180	18.5	100	2167.2	23.57	<0.01	V	<	
34699-23a	Feb-07-2018	Feb-08-2018	(OCC) Void Space of Bartlett	OCC	JD	2.6	10:40	11:10	30	5.5	100	78	7.01	0.035	V	<	PAPR / Wiping and Vacuuming Surfaces
34699-24a	Feb-07-2018	Feb-08-2018	(OCC) Void Space of Bartlett	OCC	JD	2.6	10:40	11:10	30	7.5	100	78	9.55	0.047	V	<	PAPR / Wiping and Vacuuming Surfaces
34699-26a	Feb-07-2018	Feb-08-2018	(QC PCM) MCR	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-27a	Feb-07-2018	Feb-08-2018	(QC) FB OCC	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed 0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

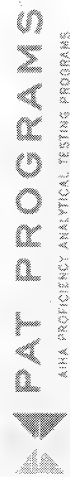
Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

3/3

Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

No information has been removed or severed from this page



North West
Environmental Group Ltd.

2/1/2018

WorkSafeBC Online - Notice of Project

WORK SAFE BC

WORKING TO MAKE A DIFFERENCE

Notice of ProjectNOP Confirmation number: **E768383****Owner information**

Account #:
Name: **Victoria Coast Guard Base**
Country: **Canada**
Address: **25 Huron Street**

City: **Victoria**
Province: **British Columbia**
Postal code:

Prime contractor or employer information

Account #:
Name:
Country: **Canada**
Address:

City:
Province: **British Columbia**
Postal code:

Person in charge of project

Name:
Job title: **Operations Manager**
Email: **info@haz-mat.ca**
Phone number: **(250) 891-8611** Ext:

Person completing this form

Name:
Email: **info@haz-mat.ca**
Phone number: **(250) 891-8611** Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?**Required documents and additional information to be submitted**

Additional documents: **Yes**
Delivery method: **E-Mail**
Sent date: **2018/02/01**

NOP Confirmation number: **E768383****Asbestos, Lead or Other Similar Exposure Work Activity**

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #: **968887**
Name: **Canadian HAZ-MAT Environmental Ltd**
Country: **Canada**
Address: **1111 Tulip Ave**

City: **Victoria**
Province: **British Columbia**
Postal code: **V8Z 7Z2**

Consulting firmsName(s): **Northwest Environmental****Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity**

Attachments: **Yes**
Delivery method: **E-Mail**
Sent date: **2018/02/01**

Planned activity for a building or structure that contains asbestos materials or where asbestos-containing material has been processed, manufactured or stored

Demolition:
Repair: **Yes**

Hours of work

Hours of work from: **08:00**

Hours of work to: **16:00**Number of workers per shift
Total: **3**Renovation or
alteration:
Encapsulation:**Activity type involving asbestos-containing material**Removal: **Yes**

Enclosure:

Encapsulation: **Yes****Asbestos Work Activity Level**Risk level is: **Moderate****Lead project information (required only when completing a lead project)**

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: **E768383****Project site locations**

Site Location	Start date	Project city	Duration	Unit	Project site location
1	2018/02/04	Victoria	3	Days	Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email: prevnop@WorkSafeBC.com
(if your attachments are over 10 MB, send multiple emails or email us for further instructions)

Fax: 604.276.3247

Mailing address: WorkSafeBC, Prevention Division
PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone: 604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email: prevnop@WorkSafeBC.com

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: February-22-18 6:42 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Chief Officer
Subject: IIR - Asbestos Dust Sampling
Attachments: Wheelhouse Console Dust Sampling.pdf; 34699 ASB ACD1 V1.0 - CCGS Bartlett - Laundry Room.pdf; 34699 ASB ACD2 V1.0 - CCGS Bartlett - Wheelhouse and Consoles.pdf; 34699 ASB ACD3 V1.0 - CCGS Bartlett - MCR Stores and MCR Console.pdf; 34699 ASB ACD4 V1.0 - CCGS Bartlett - Void Space Under Wheelhouse.pdf; 34699 RA1 V1.0 - CCGS Bartlett Dust Abatement.pdf

FYI,

Please see attached IIR regarding asbestos dust found in Bridge console; (and numerous other asbestos abatement & test reports from last patrol cycle)

Highlights:

- Dust from Bridge Fire Panel console tested positive for ACM (Asbestos Containing Material). "High Contamination".
- Laundry Room Dust (behind washing machines) also tested positive for ACM following hull bulkhead panel seam splitting & hull contact with dock. "Moderate" Range.
- Wiring from Bridge console (70% Chrysotile) & MCR console tested positive for ACM, (30% Chrysotile – but non-friable).
- 30% Chrysotile also tested positive in a sample of pump/valve packing from our MCR Stores.
- Air Testing results → mostly below level of detection (0.01f/ml – fibre per ml air). Results received and some samples were above the limit of detection but below the limit of quantitation (LOQ). NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are below WorkSafeBC exposure limits".

February 9, 2018 - NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE: "We met the minimum volume and all samples were less than 0.01 fibres per mL, (Limits of Detection" / LOD), under WorkSafeBC limits".

- Dust sample results received: HVAC return and 3 of 4 samples from ER returned low or none detected. MCR console sample returned "moderate", this was directly below the ACM wire removals.
- Feb.9.2018 NWE (NorthWest Environmental) recommendations: We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.
- "A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire insulation on the bridge. Restricting access and sampling the dust was the course of action upon receiving the wire insulation results. Void space, MCR console, MCR Stb'd Stores and Laundry Room access was restricted upon receiving the results on asbestos-containing materials found."

Section J. Corrective Measures:

Future Asbestos Management Surveys to include on-board air sampling and dust wipe samples.

As per NWE recommendation future work inside Wheelhouse and MCR consoles and Wheelhouse Void to be considered asbestos work due difficulty of removing all the dust for the wiring, terminal strips, circuit boards/components, cloth wrap on wiring and bronze braid on the electrical cables.

Work outside of normally accessed spaces/equipment may encounter the possibility of asbestos debris and be considered in the risk assessment prior to starting work.

Vessel Specific Asbestos Management plan and labels updated to cover findings during the investigation.

Upon return to Victoria additional dust sampling to be conducted in the ER/AMS as per NWE recommendations.

Training arranged for 5 crew members for Asbestos Awareness and Abatement on February 22/23.

- NWE developed the Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments. Compartments or spaces included: Wheelhouse including consoles, Void Space below Wheelhouse due to open wire transits to Wheelhouse consoles, Laundry Room, MCR Console and MCR Stb'd Stores.
- Attached reports of ACM dust cleanup from Bridge, Laundry Room, MCR Console, and Bridge Void Space may be of interest.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccgsg-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|--|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) <input type="text"/> | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett																									
Date of Report (YYYY-MM-DD) 2018-02-12	Mailing Address 25 Huron Street, Victoria BC V8V 4V9																										
Name of Responsible Supervisor Captain Mike McCullagh		Supervisor's Telephone # 250.213.3685																									
Organization (Select One)																											
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)																											
Regional Directorate (Select One)																											
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs																											
Program/Branch (Select One)																											
<table border="0"> <tr> <td><input type="checkbox"/> AtoN</td> <td><input type="checkbox"/> MarSup</td> <td><input type="checkbox"/> Refit and Maintenance</td> </tr> <tr> <td><input type="checkbox"/> Canso</td> <td><input type="checkbox"/> MCI</td> <td><input type="checkbox"/> ROC</td> </tr> <tr> <td><input type="checkbox"/> CGSS</td> <td><input type="checkbox"/> MCTS</td> <td><input type="checkbox"/> SAR</td> </tr> <tr> <td><input type="checkbox"/> E&I</td> <td><input type="checkbox"/> ME</td> <td><input type="checkbox"/> Science</td> </tr> <tr> <td><input type="checkbox"/> EFM (C&P)</td> <td><input checked="" type="checkbox"/> MNS</td> <td><input type="checkbox"/> Vessels of Concern</td> </tr> <tr> <td><input type="checkbox"/> ER</td> <td><input type="checkbox"/> MSET</td> <td><input type="checkbox"/> Other <input type="text"/></td> </tr> <tr> <td><input type="checkbox"/> Ice</td> <td><input type="checkbox"/> Ops Business</td> <td></td> </tr> <tr> <td><input type="checkbox"/> ILS</td> <td></td> <td></td> </tr> </table>				<input type="checkbox"/> AtoN	<input type="checkbox"/> MarSup	<input type="checkbox"/> Refit and Maintenance	<input type="checkbox"/> Canso	<input type="checkbox"/> MCI	<input type="checkbox"/> ROC	<input type="checkbox"/> CGSS	<input type="checkbox"/> MCTS	<input type="checkbox"/> SAR	<input type="checkbox"/> E&I	<input type="checkbox"/> ME	<input type="checkbox"/> Science	<input type="checkbox"/> EFM (C&P)	<input checked="" type="checkbox"/> MNS	<input type="checkbox"/> Vessels of Concern	<input type="checkbox"/> ER	<input type="checkbox"/> MSET	<input type="checkbox"/> Other <input type="text"/>	<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business		<input type="checkbox"/> ILS		
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<input type="checkbox"/> EFM (C&P)	<input checked="" type="checkbox"/> MNS	<input type="checkbox"/> Vessels of Concern																									
<input type="checkbox"/> ER	<input type="checkbox"/> MSET	<input type="checkbox"/> Other <input type="text"/>																									
<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business																										
<input type="checkbox"/> ILS																											

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <input type="text"/>	Given Name <input type="text"/>	Initial(s) <input type="text"/>	Age <input type="text"/>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title <input type="text"/>	
Years of experience in current position <input type="text"/>			
Employment Status			
<input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor			
<input type="checkbox"/> Other (Specify) <input type="text"/>			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Juan de Fuca Strait - WCVI Transiting North

Date of Incident (YYYY-MM-DD)

2018-01-31

Time of Incident (Local)

15:39

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Unknown dust identified as containing Asbestos

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

January 31, 2018 - 1539 Results received from dust samples taken during Wheelhouse Console ACM Wiring Insulation IIR. Test results from the consoles fell in the high range compared with expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (iATL). In consultation with the RD Fleet, the vessel turned around and returned to Victoria and was secured @ 2350. Additionally results from dust samples taken in the Laundry Room after the cracked ACM bulkhead IIR clean-up fell in the moderate range compared with "experience standards".

February 1, 2018 - 0800 Northwest Environmental Group Limited (NWE) and Canadian HAZ-MAT were contacted to attend the vessel to develop a sampling/testing and remediation plan. NWE provided third party oversight of the remediation work and performed the visual and air clearance inspection and documentation. Bulk samples taken from wiring in MCR console due to similar morphology wiring which tested positive in the Wheelhouse. Sample results returned positive for 30% Chrysotile asbestos. Roll of packing in MCR STBD stores tested positive for 30% Chrysotile asbestos.

February 2, 2018 - 1000 NWE on-board to implement Background Asbestos Testing. Background testing was conducted to look for evidence of the spread of asbestos contamination. The test consists of surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether the fibres have been rendered airborne. 1630 the first set of results for the low volume air sampling were received and verbally conveyed by NWE, the results were below the level of detection 0.01f/ml. 1900 sample results conveyed by NWE from the longer running high volume pumps were also below the level of detection 0.01f/ml. NWE developed the Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments. Compartments or spaces included: Wheelhouse including consoles, Void Space below Wheelhouse due to open wire transits to Wheelhouse consoles, Laundry Room, MCR Console and MCR Stbd Stores.

February 3, 2018 - NWE returned to perform long duration (10 hours) sampling in the same locations. The sample volume must be greater than 1425 liters to qualify the results to prove the air meets the Air Clearance/Permissible Exposure Limit for continuous occupation of 0.01f/ml. Results received and some samples were above the limit of detection but below the limit of quantitation. NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are below WorksafeBC exposure limits"

Dust samples to couriered by NWE to iATL February 5, 2018 with quick turn around time of samples of 6 hours ordered. Hold up clearing customs at the border required re-sampling on Feb 8, 2018.

February 4, 2018 - Canadian Haz-mat began work cleaning Wheelhouse consoles with oversight provided by NWE.

February 5, 2018 - Canadian Haz-mat finished work in the Wheelhouse and started and finished work in the Laundry Room. Both spaces passed visual inspection by NWE.

February 6, 2018 - Canadian Haz-mat on-board removing thermocouple extension wire from ER and MCR console. MCR console cleaning started and completed. All unidentifiable packing disposed of through Canadian Hazmat. Stbd MCR cleaning started and completed. NWE air clearance samples from Wheelhouse and Laundry Room passed.

February 7, 2018 - Canadian Haz-mat on-board setup and performing cleaning in Bridge Void Space. Stbd MCR, ER, and MCR passed visuals inspection by NWE. NWE air clearance sampling from MCR and Stbd MCR taken and passed.

February 8, 2018 - Canadian Haz-mat onboard completed cleaning in Bridge Void Space. Space passed visual inspection by NWE. NWE air clearance sample from Bridge Void Space passed. Dust wipe samples retook in ER, MCR, and HVAC as the initial samples were still held up at customs.

February 9, 2018 - NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE: "We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits."

Dust sample results received: HVAC return and 3 of 4 samples from ER returned low or none detected. MCR console sample returned "moderate", this was directly below the ACM wire removals. The area was wet wiped after the sample taken. MCR passed air and visual clearance by NWE. As per NWE recommendation, console top was HEPA vacuumed. One sample taken from ER in an inaccessible place returned "elevated". Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: "Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source. At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer." Follow up sampling to be conducted upon return to Victoria. Defect entered.

Reports attached:

- iATL dust wipe samples results
- NWE air sample test results alongside
- NWE Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments
- NWE Asbestos Air and Visual Clearance Documents for effected spaces
- NWE air sample test results while underway at sea conditions

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident? ☒ Yes ☐ No

Specify

A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire insulation on the bridge. Restricting access and sampling the dust was the course of action upon receiving the wire insulation results. Void space, MCR console, MCR Stbd Stores and Laundry Room access was restricted upon receiving the results on asbestos-containing materials found.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☒ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions	Substandard Conditions
<input type="checkbox"/> Bypassing safety devices	<input type="checkbox"/> Congested or restricted area
<input type="checkbox"/> Failure to check or monitor	<input type="checkbox"/> Defective tools, equipment or materials
<input type="checkbox"/> Failure to communicate/coordinate	<input type="checkbox"/> Excessive noise
<input type="checkbox"/> Failure to follow procedure/policy	<input type="checkbox"/> Heat/cold exposure
<input checked="" type="checkbox"/> Failure to identify hazard/risk	<input type="checkbox"/> Inadequate/improper PPE or use of PPE
<input type="checkbox"/> Failure to react/correct	<input type="checkbox"/> Inadequate communication
<input type="checkbox"/> Failure to service equipment properly	<input type="checkbox"/> Inadequate guards or barriers
<input type="checkbox"/> Failure to use PPE	<input type="checkbox"/> Inadequate information/data
<input type="checkbox"/> Failure to warn or secure	<input type="checkbox"/> Inadequate instruction/procedure
<input type="checkbox"/> Horseplay	<input type="checkbox"/> Inadequate preparation/planning
<input type="checkbox"/> Improper lifting	<input type="checkbox"/> Inadequate support/assistance
<input type="checkbox"/> Improper loading, placing, mixing	<input type="checkbox"/> Inadequate ventilation
<input type="checkbox"/> Improper position/posture for task	<input type="checkbox"/> Inadequate warning system
<input type="checkbox"/> Operating at improper speed	<input type="checkbox"/> Lack of tools, equipment or materials
<input type="checkbox"/> Using defective equipment	<input type="checkbox"/> Poor housekeeping
<input type="checkbox"/> Using equipment improperly	<input checked="" type="checkbox"/> Presence of harmful materials
<input type="checkbox"/> Other action (Specify)	<input type="checkbox"/> Radiation exposure
	<input type="checkbox"/> Uneven ground/terrain
	<input type="checkbox"/> Weather or environmental conditions
	<input type="checkbox"/> Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Dust inside wheelhouse consoles contains asbestos. Additional wires of the same morphology as the ACM wires on the bridge found in the MCR console. NWE suspects the source of the dust is from pulling asbestos containing cabling throughout the years.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors

- ☐ Emotional stress
☐ Fatigue
☐ Lack of knowledge and/or skill
☐ Physical stress or capability
☐ Rushing or inattention
☐ Other (Specify)

Job Factors

- ☐ Abuse or misuse of equipment
☐ Inadequate engineering or design
☒ Inadequate hazard assessment
☐ Inadequate personnel to complete task
☐ Inadequate tools/equipment/materials
☐ Inadequate training and/or familiarization
☐ Inadequate work standard/procedure
☐ Lack of enforcement of procedure or supervision
☐ Standards/procedures not developed
☐ Wear and tear
☐ Other (Specify)

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

Incomplete identification and abatement of asbestos on-board. Depth and scope of previous Asbestos Surveys did not identify the wiring in these consoles.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson CE	250-882-1273	Steve Buss SE	250-213-3685
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Mike McCullagh CO	250-882-3864		

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Future Asbestos Management Surveys to include on-board air sampling and dust wipe samples.
As per NWE recommendation future work inside Wheelhouse and MCR consoles and Wheelhouse Void to be considered asbestos work due difficulty of removing all the dust for the wiring, terminal strips, circuit boards/components, cloth wrap on wiring and bronze braid on the electrical cables.
Work outside of normally accessed spaces/equipment may encounter the possibility of asbestos debris and be considered in the risk assessment prior to starting work.
Vessel Specific Asbestos Management plan and labels updated to cover findings during the investigation.
Upon return to Victoria additional dust sampling to be conducted in the ER/AMS as per NWE recommendations.
Training arranged for 5 crew members for Asbestos Awareness and Abatement on February 22/23.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Marine Engineering		

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, o=Canadian Coast Guard, ou=Coast Guard, email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.13 08:37:47 -0800</small>
Title Chief Engineer	Date (YYYY-MM-DD)	13/2/2017
Email address BartlettCE@ccgs-ngcc.gc.ca		

Investigators comments

Depending on the anticipated service life of the Bartlett, consideration should be given for a thorough abatement plan to be developed.
Future Asbestos Management Surveys to include regular air and dust sampling.
Bulk sampling frequency and scope to be increased to further identify/clear areas on-board of ACM.
At sea air sampling plan was developed with NWE, and performed to ensure air quality while at sea prior to returning the vessel to operational status.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Steve Buss	250-213-3685	Steve Buss <small>Digitally signed by Steve Buss DN: cn=Steve Buss, o=Canadian Coast Guard, ou=OFO, email=BartlettSE@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.13 08:45:05 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-02-13

Workplace OHS Committee Member/Health and Safety Representative comments

Investigation performed to complete satisfaction of the Workplace OHS Committee Member. A well thought out plan has been developed for future testing to ensure the health and safety of all crew members in the future.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.13 09:15:53 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-02-13

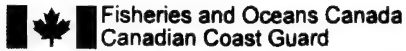
Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with corrective and preventative measures adopted, and the heightened awareness and vigilance with regard to ACM containing work spaces.

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and



the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.



North West
Environmental Group Ltd.

201-415 Gorge Road E
Victoria, B.C. V8T 2W1

Tel: 250-384-9695

Fax: 250-384-9865

E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard
25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Laundry Room
25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 5, 2018
Address of the abatement project	CCGS Bartlett – Laundry Room 25 Huron Street, Victoria BC
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"

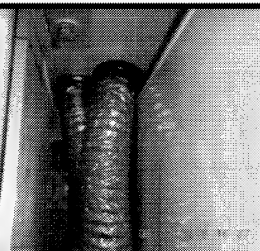
Contractor Scope of Work:

Remove asbestos-containing dust from all surfaces behind the washing machines and dryers. Clean all exposed surfaces in the laundry room. Moderate risk clean up of less than 5 square meters of dusty surfaces.

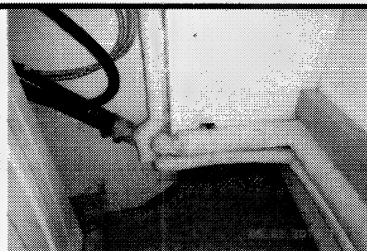
Photo Plate



Photo of entrance into the Landry Room. Popup enclosure was used to create a larger work space.



Example of dust cleaned from behind units.






Example of dust removed from the work area.



North West
Environmental Group Ltd.

Canadian Coast Guard
CCGS Bartlett – Laundry Room

NWest Project Number: 34699
Date: February 8, 2018


		
Example of dust removed from the work area.	Example of Laundry Room exposed surface cleaned of dust.	Example of the deck beneath the units cleaned of dust.
Notice of Project — Asbestos	NOPA E768383	
Waste manifest documentation	BP16288-2	
Consultant that performed the final visual inspection	[Redacted] Technologist	
<p>This space was originally cleaned following the discovery of a crack in the asbestos-containing bulkhead panel under the porthole. The abatement contractor cleaned all accessible surfaces, including inside cupboards following moderate risk procedures. Dust was observed behind the washers and driers, which are fastened into place, rendering this dust inaccessible. NWest conducted surface wipe sampling and found the dust to contain asbestos, warranting additional efforts to remove it.</p> <p>NWest conducted a Final Visual Inspection and clearance air sampling. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".</p>		
<p>Air Samples</p> <p>Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities. These have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).</p> <p>WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.</p> <p>Laundry Room clearance samples: 34699-5 and 34699-6. Field blank: 34699-9.</p>		
Name and signature of the consultant who collected the air clearance samples	[Redacted] [Redacted] Technologist	
Reviewed by	[Redacted] [Redacted] Senior Project Manager Qualified Person as per OHS Reg 6.1	

Canadian Coast Guard
CCGS Bartlett – Laundry Room

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX A – Field Reports

s.19(1)

 North West Environmental Group Ltd.		ASBESTOS ABATEMENT CHECKLIST FINAL VISUAL INSPECTION CHECKLIST (FOR USE BY THE ENVIRONMENTAL CONSULTANT)	
Date: Feb 5, 2018		Project number: 34699	
Time on/off site: 1:45pm	NWest representative(s): B Salmon		
Report number: 34699	Site address/location: 25 Huron St. CGSS Bartlett		
Weather: Clear	Contractor/Representative Name: Canadian Hot Flat		
Client and contact name: [REDACTED]	Number of abatement workers on site: 6		
Volume of Containment: Small	Number of negative air units in use: 0		
Work Zone Location: Laundry Rm			
RESULTS:	FAILED or PASSED. See observations and instructions below.		
Number of Inspection (prior to passing): <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5			
Checked by Representative of Building Owner			
General	Yes (Y)	No (N)	Observations
All equipment removed from area	✓		
All asbestos within scope removed from the substrate		✓	- Reconnected while on-site
All ACM Waste removed from containment	✓		
Area is ready for barriers to be removed	✓		- Upon Air Clearance
Checked by Representative of Building Owner			
Enclosure	Yes (Y)	No (N)	Observations
Decontamination chambers free of dust, debris and waste	✓		
Area ready for encapsulation			N/A
Negative Air Machines have sufficient DOP tests			N/A
Negative pressure (where applicable) at min. -0.03 in.w.g.			N/A
All enclosures intact and properly sealed	✓		
Space vacuumed with certified HEPA vacuum only	✓		
Poly wiped clean (free from removable residue)	✓		

NWST FINAL VISUAL INSPECTION REPORT
SITE ADDRESS/LOCATION:

PROJECT NUMBER:
REPORT NUMBER:

Enclosure	Yes (Y)	No (N)	Observations
Negative air machine (where applicable) wiped down			N/A
Discharge hoses clean and free of perforations			N/A
All waste removed from space	✓		
Remaining tools and equipment wiped down or bagged	✓		
Window sills and tracks free from debris	✓		
Walls and doors free from dust and debris	✓		
Tops of baseboards free from dust and debris	✓		
Tops of doors, hinges and frames free from dust and debris	✓		
Door frame pockets free from dust and debris	✓		
Wall/Ceiling mounted fixtures free from dust and debris		✓	Reconciled on-site
Floors including scaffolding walk boards free from dust and debris		✓	" "
Instructions for Contractor:			Contractor Representative Signature:
1. Clean corners behind pipes			
2. Re-wipe laundry tray and tops of machines			
3.			
4.			

END OF DOCUMENT



North West
Environmental Group Ltd.

Canadian Coast Guard
CCGS Bartlett – Laundry Room

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX B – Analytical Results



North West
Environmental Group Ltd.



North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 06, 2018

Client Job or PO#: NEED

Project number: 34699

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/w	LOQ	Comment
34699-1a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	13:51	14:21	30	13.0	100	76.2	16.56	0.084	V	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-2a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	15:10	16:10	60	1.0	100	152.4	1.27	<0.01	VV	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-3a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-4a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34699-5a	Feb-06-2018	Feb-06-2018	(AC1 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	2.0	100	2456.26	2.55	<0.01	VV	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-6a	Feb-06-2018	Feb-06-2018	(AC2 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	1.0	100	2456.26	1.27	<0.01	W	<	
34699-9a	Feb-06-2018	Feb-06-2018	(QC) Field Blank 1	QC	JD	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
34699-11a	Feb-06-2018	Feb-06-2018	(AC5 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	7.5	100	2441.4	9.55	<0.01	V	<	
34699-12a	Feb-06-2018	Feb-06-2018	(AC6 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	4.0	100	2441.4	5.10	<0.01	W	<	

* Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

WV - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibres/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



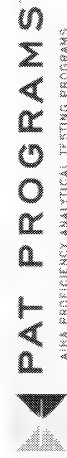
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Canadian Coast Guard
CCGS Bartlett – Laundry Room

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

2/1/2018

WorkSafeBC Online - Notice of Project

WORK SAFE BC

WORKING TO MAKE A DIFFERENCE

Notice of ProjectNOP Confirmation number: **E768383****Owner information**

Account #:
Name: **Victoria Coast Guard Base**
Country: **Canada**
Address: **25 Huron Street**

City: **Victoria**
Province: **British Columbia**
Postal code:

Prime contractor or employer information

Account #:
Name:
Country: **Canada**
Address:

City:
Province: **British Columbia**
Postal code:

Person in charge of project

Name:
Job title: **Operations Manager**
Email: **info@haz-mat.ca**
Phone number: **(250) 891-8611** Ext:

Person completing this form

Name:
Email: **info@haz-mat.ca**
Phone number: **(250) 891-8611** Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?**Required documents and additional information to be submitted**

Additional documents: **Yes**
Delivery method: **E-Mail**
Sent date: **2018/02/01**

NOP Confirmation number: **E768383****Asbestos, Lead or Other Similar Exposure Work Activity**Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least **48 hours** notice required.**Employer responsible for the work involving asbestos, lead or other similar exposure work activity**

Account #: **968887**
Name: **Canadian HAZ-MAT Environmental Ltd**
Country: **Canada**
Address: **1111 Tulip Ave**

City: **Victoria**
Province: **British Columbia**
Postal code: **V8Z 7Z2**

Consulting firmsName(s): **Northwest Environmental****Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity**

Attachments: **Yes**
Delivery method: **E-Mail**
Sent date: **2018/02/01**

Planned activity for a building or structure that contains asbestos materials or where asbestos-containing material has been processed, manufactured or stored

Demolition:
Repair: **Yes**

Hours of work

Hours of work from: **08:00**

2/1/2018

WorkSafeBC Online - Notice of Project

Hours of work to: **16:00**

Number of workers per shift
Total: **3**

Renovation or
alteration:
Encapsulation:

Activity type involving asbestos-containing material

Removal: **Yes**
Enclosure:
Encapsulation: **Yes**

Asbestos Work Activity Level

Risk level is: **Moderate**

Lead project information (required only when completing a lead project)

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: **E768383**

Project site locations

Site Location	Start date	Project city	Duration	Unit	Project site location
1	2018/02/04	Victoria	3	Days	Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email: prevnop@WorkSafeBC.com
(if your attachments are over 10 MB, send multiple emails or email us for further instructions)

Fax: 604.276.3247

Mailing address: WorkSafeBC, Prevention Division
PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone: 604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email: prevnop@WorkSafeBC.com



North West
Environmental Group Ltd.

201-415 Gorge Road E
Victoria, B.C. V8T 2W1

Tel: 250-384-9695

Fax: 250-384-9865

E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard
25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Wheelhouse and Consoles
25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 4-5 2018
Address of the abatement project	CCGS Bartlett – Wheelhouse and Consoles 25 Huron Street, Victoria BC
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"

Contractor Scope of Work:

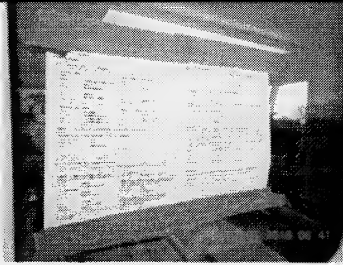
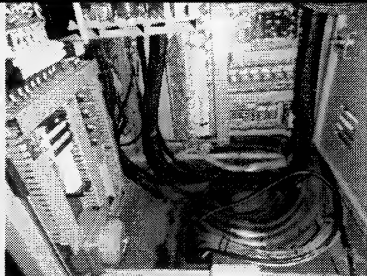
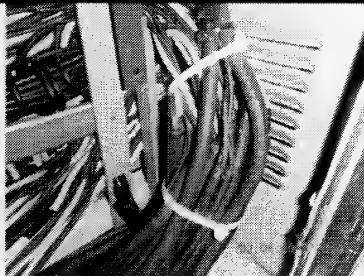
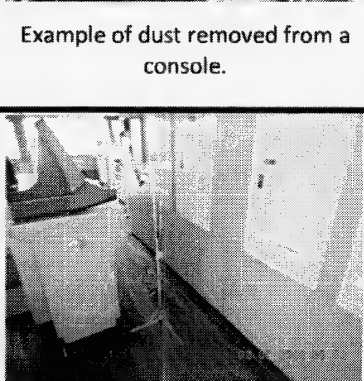
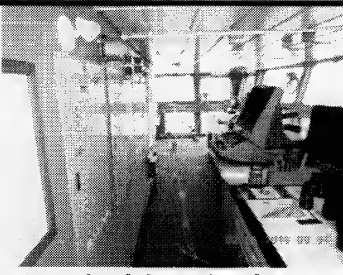


Remove asbestos-containing dust from all accessible surfaces within all consoles. Clean all exposed surfaces in the Wheelhouse. Moderate risk clean-up of dusty surfaces.

NOTE 1: the intent of this work was not to remove all observable dust, but to remove all accessible, loosely adhered gross contamination from within the consoles and to clean all surfaces in the Wheelhouse in order to reduce the amount of loose material that may be rendered airborne during normal vessel operations. Abatement workers were required to gently vacuum cables and electrical components within the consoles; they were not permitted to handle cables beyond this to remove concealed dust.

NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.





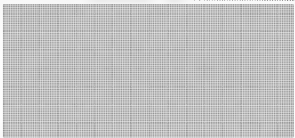
North West
Environmental Group Ltd.

Photo Plate	
	
Photo of NOPA posted on work site.	Example of dust cleaned from a console.
	
Example of dust removed from a console.	
	
Example of cleaned surfaces in the Wheelhouse	Photo of sampling location.
	
Photo of sampling location.	
Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	Technologist
<p>Asbestos-containing cables were discovered in the Wheelhouse consoles, triggering NWest to assess the latent dust. NWest collected surface wipe samples and found the dust to contain asbestos. The consoles are regularly accessed and are open to the Wheelhouse (i.e. share an air space), therefore, cleaning of the consoles was undertaken to reduce the risk of fibres becoming airborne during normal vessel operations.</p> <p>NWest conducted a Final Visual Inspection and clearance sampling. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".</p>	
<p>Air Samples</p> <p>Worker breathing zone (Occupational) samples and Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities which have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).</p> <p>WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.</p>	

Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699
Date: February 8, 2018

Wheelhouse air samples: Occupationalss – 34699-1 and 34699-2. Air clearances – 34699-11 and 34699-12. Field blanks – 34699-3, 4, and 9.

Name and signature of the consultant who collected the air clearance samples	  Technologist
Reviewed by	 Senior Project Manager Qualified Person as per OHS Reg 6.1


Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX A – Field Reports

**ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.**

September 2016

 North West Environmental Group Ltd.		ASBESTOS ABATEMENT CHECKLIST FINAL VISUAL INSPECTION CHECKLIST (FOR USE BY THE INDUSTRIAL HYGIENIST)		
Date: <i>Feb 6, 2018</i>	Time: <i>0910</i>	Contractor: <i>Canadian Hermit</i>	Inspector: <i>K.D.</i>	
Site:		Present at Inspection: <i>K.D. (NWest)</i> <i>Rob (Canadian Hermit)</i>		
Project:	<i>Bar/ltt Dust Abatement</i>			
Location:	<i>1) Wheelhouse 2) Laundry Room</i>		Inspection Report No.: <i>1, 2.</i>	
Number of Inspection (prior to passing): <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5				
Comments: <i>wheelhouse required some cleaning on upper ledge of interior cabinets.</i>		Verified to be Complete by Contractor (Initial of Sup't)	Checked by Representative of Building Owner	
			Yes (Y)	No (N)
				Action Taken
General				
Is all equipment removed from area?			✓	
Is all asbestos within scope removed?			* ✓	
All ACM Waste removed from area?			✓	
Is area ready for barriers to be removed to critical barriers?			* ✓	
Is load-out, decon, and equipment room free of debris and waste?			✓	
Is area ready for encapsulation?				NA
Do Negative Air Machines have sufficient DOP tests?			NA	NA
Enclosure				
Negative pressure (where applicable) at min. -0.03 in.w.g.				NA
All enclosures intact and properly sealed			✓	
Space vacuumed with certified HEPA vacuum only			✓	
Poly wiped clean (free from removable residue)			✓	
Negative air machine (where applicable) wiped down				NA
Discharge hoses clean and free of perforations				NA
All waste removed from space			✓	
Remaining tools and equipment wiped down or bagged			NA	*
Dust and Debris: Vertical and horizontal surfaces				
Window sills and tracks			✓	
Walls and doors			✓	



North West Environmental Group Ltd.

Page 1 of 3

Form: IC1.V0.A-12/10/16

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**ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.**

September 2016

Tops of baseboards		✓	NA	
Tops of doors, hinges and frames		✓		
Door frames pockets		✓		
Wall mounted fixtures		✓		
Floors including all corners and spaces behind doors		✓		



North West
Environmental Group Ltd.

Page 2 of 3

Form: IC1.V0.A-12/10/16

000696

ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

OBSERVATIONS	RECOMMENDATIONS/ INSTRUCTIONS	DATE RECTIFIED/ INSPECTOR'S INITIALS
1. Location: <i>wheel house</i>		
a. <i>Upper ledge of cabinet in front doors are retaining dust.</i>	▪ <i>Re clean these areas. - Rectified on site</i>	<i>K.O.</i>
b. <i>Carpets free of dust and debris. - all surfaces are dust free</i>	▪	<i>K.O.</i>
c.	▪	
2. Location: <i>laundry room</i>		
a. <i>Area is dust + debris + free.</i>	▪	<i>K.O.</i>
b. <i>laundry machines have been returned to position</i>	▪	<i>K.O.</i>
c.	▪	
3. Location:		
d.	▪	
e.	▪	
f.	▪	
4. Location:		
a.	▪	
b.	▪	
c.	▪	



Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX B – Analytical Results



North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

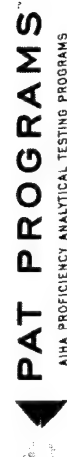
Date: February 06, 2018

Client Job or PO#: NEED

Project number: 34699

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/v	LOQ	Comment
34699-1a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	13:51	14:21	30	13.0	100	76.2	16.56	0.084	V	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-2a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	15:10	16:10	60	1.0	100	152.4	1.27	<0.01	VV	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-3a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-4a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34699-5a	Feb-06-2018	Feb-06-2018	(AC1 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	2.0	100	2456.26	2.55	<0.01	VV	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-6a	Feb-06-2018	Feb-06-2018	(AC2 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	1.0	100	2456.26	1.27	<0.01	W	<	
34699-9a	Feb-06-2018	Feb-06-2018	(QC) Field Blank 1	QC	JD	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
34699-11a	Feb-06-2018	Feb-06-2018	(AC5 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	7.5	100	2441.4	9.55	<0.01	V	<	
34699-12a	Feb-06-2018	Feb-06-2018	(AC6 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	4.0	100	2441.4	5.10	<0.01	W	<	

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibres/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



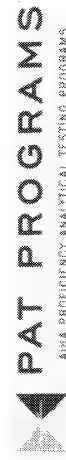
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

2/1/2018

WorkSafeBC Online - Notice of Project

WORK SAFE BC

WORKING TO MAKE A DIFFERENCE

Notice of ProjectNOP Confirmation number: **E768383****Owner information**

Account #: _____
 Name: **Victoria Coast Guard Base**
 Country: **Canada**
 Address: **25 Huron Street**

 City: **Victoria**
 Province: **British Columbia**
 Postal code: _____

Prime contractor or employer information

Account #: _____
 Name: _____
 Country: **Canada**
 Address: _____

 City: _____
 Province: **British Columbia**
 Postal code: _____

Person in charge of project

Name: _____
 Job title: **Operations Manager**
 Email: **info@haz-mat.ca**
 Phone number: **(250) 891-8611** Ext: _____

Person completing this form

Name: _____
 Email: **info@haz-mat.ca**
 Phone number: **(250) 891-8611** Ext: _____

Has a prime contractor agreed in writing with the owner to be the prime contractor? _____

Required documents and additional information to be submitted

Additional documents: **Yes**
 Delivery method: **E-Mail**
 Sent date: **2018/02/01**

NOP Confirmation number: **E768383****Asbestos, Lead or Other Similar Exposure Work Activity**

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least **48 hours** notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #: **968887**
 Name: **Canadian HAZ-MAT Environmental Ltd**
 Country: **Canada**
 Address: **1111 Tulip Ave**

 City: **Victoria**
 Province: **British Columbia**
 Postal code: **V8Z 7Z2**

Consulting firms

Name(s): **Northwest Environmental**

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments: **Yes**
 Delivery method: **E-Mail**
 Sent date: **2018/02/01**

Planned activity for a building or structure that contains asbestos materials or where asbestos-containing material has been processed, manufactured or stored

Demolition: _____
 Repair: **Yes**

Hours of work

Hours of work from: **08:00**

Hours of work to: **16:00****Number of workers per shift**
Total: **3**Renovation or
alteration:
Encapsulation:**Activity type involving asbestos-containing material**Removal: **Yes**
Enclosure:
Encapsulation: **Yes****Asbestos Work Activity Level**Risk level is: **Moderate****Lead project information (required only when completing a lead project)**

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: **E768383****Project site locations**

Site Location	Start date	Project city	Duration	Unit	Project site location
1	2018/02/04	Victoria	3	Days	Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email: prevnop@WorkSafeBC.com
(if your attachments are over 10 MB, send multiple emails or email us for further instructions)

Fax: 604.276.3247

Mailing address: WorkSafeBC, Prevention Division
PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone: 604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email: prevnop@WorkSafeBC.com



North West
Environmental Group Ltd.

201-415 Gorge Road E
Victoria, B.C. V8T 2W1

Tel: 250-384-9695

Fax: 250-384-9865

E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard
25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Machinery Control Room (MCR) Stores and MCR Console.
25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 7, 2018
Address of the abatement project	CCGS Bartlett – MCR Console and MCR Stores 25 Huron Street, Victoria BC
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"

Contractor Scope of Work

MCR Console:

Remove asbestos-containing dust from all accessible surfaces within the console. Cut asbestos-containing cables at the opening of the conduit from the engines and seal the openings. Bag and remove the cables as asbestos waste. Clean the exterior of the console casing. Moderate risk clean-up of dusty surfaces.

NOTE 1: the intent of this work was not to remove all observable dust, but to remove all accessible, loosely adhered gross contamination from within the consoles and to clean all surfaces in the MCR in order to reduce the amount of loose material that may be rendered airborne during normal vessel operations. Abatement workers were required to gently vacuum cables and electrical components within the consoles; they were not permitted to handle cables beyond this to remove concealed dust.

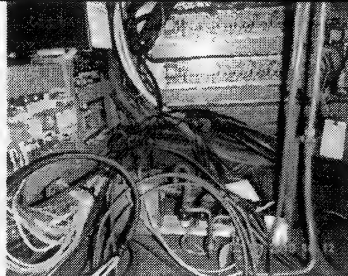
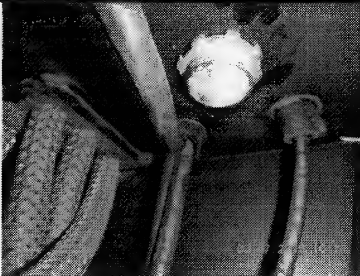

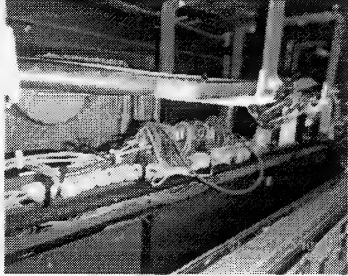
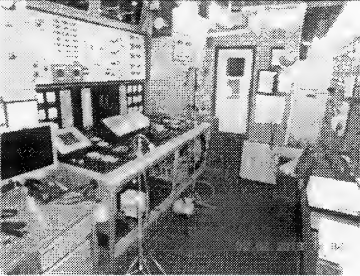


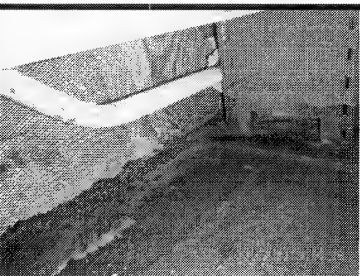
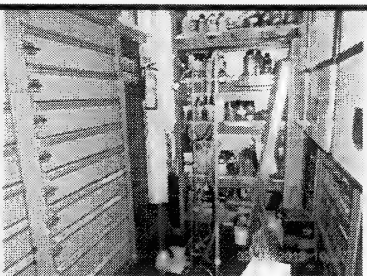
NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.

MCR Store:

Remove asbestos-containing rope gasket/packing from the storage room. Clean all surfaces on the shelving unit following moderate risk procedures.



North West
Environmental Group Ltd.

Photo Plate		
		
MCR: Accessible surfaces in console cleaned.	MCR: Example of conduit opening. Asbestos-containing cables removed and the conduit opening sealed.	MCR: Deck and first foot of cables behind the console were cleaned.
		
MCR: Accessible surfaces in backside of console cleaned.	MCR: Air clearance samples.	MCR Stores: Asbestos-containing materials removed and shelving cleaned.
		
MCR Stores: Boxes and other materials to remain were vacuumed.	MCR Stores: Deck beneath shelving cleaned.	MCR Stores: Air clearance samples.
Notice of Project — Asbestos	NOPA E768383	
Waste manifest documentation	BP16288-2	
Consultant that performed the final visual inspection	Technologist	


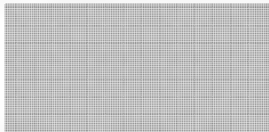
Bulk sample of stored gaskets identified asbestos-containing rope gasket/packing materials. The asbestos-containing gaskets have been exposed in the MCR Stores for an unknown length of time. This warranted efforts to remove all dust and debris from MCR Stores and MCR Console area.

NWest conducted a final clearance inspection and Final Visual Inspection. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities which have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).

WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.

Name and signature of the consultant who collected the air clearance samples	 Technologist
Reviewed by	 Senior Project Manager Qualified Person as per OHS Reg 6.1

Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX A – Field Reports



North West
Environmental Group Ltd.

**ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.**

September 2016

Tops of baseboards			NA	
Tops of doors, hinges and frames		✓		
Door frames pockets		✓		
Wall mounted fixtures		✓		
Floors including all corners and spaces behind doors		✓		



North West
Environmental Group Ltd.

Page 2 of 3

Form: IC1.V0.A-12/10/16

000709

ASBESTOS ABATEMENT INSPECTION REPORT
NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

OBSERVATIONS	RECOMMENDATIONS/ INSTRUCTIONS	DATE RECTIFIED/ INSPECTOR'S INITIALS
1. Location: <i>Mech Control Panel - Bartlett</i>		
a. <i>Space is clean. panel has been thoroughly clean</i>	▪ <i>free of dust + debris.</i>	<i>K.O.</i>
b.	▪	
c.	▪	
2. Location: <i>Mech Store Room - Bartlett</i>		
a. <i>Same as above. Shelf items have been removed free of dust + debris.</i>	▪	
b.	▪	
c.	▪	
3. Location: <i>Engine Room - Cables - Bartlett</i>		
d. <i>Cable ends have been cabletied + taped. free of dust + debris.</i>	▪	<i>K.O.</i>
e.	▪	
f.	▪	
4. Location:		
a.	▪	
b.	▪	
c.	▪	



North West
Environmental Group Ltd.

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Form: IC1.V0.A-12/10/16

000710

Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX B – Analytical Results



North West
Environmental Group Ltd.



North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 08, 2018

Client Job or PO#: NEED

Project number: 34699

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/v	LOQ	Comment
34699-1a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	13:51	14:21	30	13.0	100	76.2	16.56	0.084	V	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-2a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	15:10	16:10	60	1.0	100	152.4	1.27	<0.01	VV	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-3a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-4a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34699-5a	Feb-06-2018	Feb-06-2018	(AC1 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	2.0	100	2456.26	2.55	<0.01	VV	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS™
AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-6a	Feb-06-2018	Feb-06-2018	(AC2 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	1.0	100	2456.26	1.27	<0.01	VV	<	
34699-9a	Feb-06-2018	Feb-06-2018	(QC) Field Blank 1	QC	JD	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
34699-11a	Feb-06-2018	Feb-06-2018	(AC5 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	7.5	100	2441.4	9.55	<0.01	V	<	
34699-12a	Feb-06-2018	Feb-06-2018	(AC6 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	4.0	100	2441.4	5.10	<0.01	VV	<	
34699-19a	Feb-07-2018	Feb-08-2018	(AC5 PCM) MCR Stores	AC	JD	12.04	10:10	13:10	180	18.5	100	2167.2	23.57	<0.01	V	<	
34699-20a	Feb-07-2018	Feb-08-2018	(AC6 PCM) MCR Stores	AC	JD	12.04	10:10	13:10	180	14.5	100	2167.2	18.47	<0.01	V	<	
34699-21a	Feb-07-2018	Feb-08-2018	(AC7 PCM) MCR Panel Control	AC	JD	12.04	10:10	13:10	180	18.0	100	2167.2	22.93	<0.01	V	<	
34699-22a	Feb-07-2018	Feb-08-2018	(AC8 PCM) MCR Control Panel	AC	JD	12.04	10:10	13:10	180	18.5	100	2167.2	23.57	<0.01	V	<	
34699-23a	Feb-07-2018	Feb-08-2018	(OCC) Void Space of Bartlett	OCC	JD	2.6	10:40	11:10	30	5.5	100	78	7.01	0.035	V	<	PAPR / Wiping and Vacuuming Surfaces
34699-24a	Feb-07-2018	Feb-08-2018	(OCC) Void Space of Bartlett	OCC	JD	2.6	10:40	11:10	30	7.5	100	78	9.55	0.047	V	<	PAPR / Wiping and Vacuuming Surfaces
34699-26a	Feb-07-2018	Feb-08-2018	(QC PCM) MCR	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-27a	Feb-07-2018	Feb-08-2018	(QC) FB OCC	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

*** Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



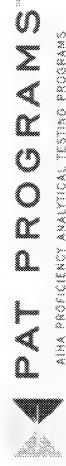
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

3/3

Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699
Date: February 8, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

2/1/2018

WorkSafeBC Online - Notice of Project

WORK SAFE BC

WORKING TO MAKE A DIFFERENCE

Notice of ProjectNOP Confirmation number: **E768383****Owner information**

Account #:
Name: **Victoria Coast Guard Base**
Country: **Canada**
Address: **25 Huron Street**

City: **Victoria**
Province: **British Columbia**
Postal code:

Prime contractor or employer information

Account #:
Name:
Country: **Canada**
Address:

City:
Province: **British Columbia**
Postal code:

Person in charge of project

Name: 
Job title: **Operations Manager**
Email: **info@haz-mat.ca**
Phone number: **(250) 891-8611** Ext:

Person completing this form

Name: 
Email: **info@haz-mat.ca**
Phone number: **(250) 891-8611** Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents: **Yes**
Delivery method: **E-Mail**
Sent date: **2018/02/01**

NOP Confirmation number: **E768383****Asbestos, Lead or Other Similar Exposure Work Activity**

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #: **968887**
Name: **Canadian HAZ-MAT Environmental Ltd**
Country: **Canada**
Address: **1111 Tulip Ave**

City: **Victoria**
Province: **British Columbia**
Postal code: **V8Z 7Z2**

Consulting firms

Name(s): **Northwest Environmental**

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments: **Yes**
Delivery method: **E-Mail**
Sent date: **2018/02/01**

Planned activity for a building or structure that contains asbestos materials or where asbestos-containing material has been processed, manufactured or stored

Demolition:
Repair: **Yes**

Hours of work

Hours of work from: **08:00**

Hours of work to: **16:00****Number of workers per shift**Total: **3**Renovation or
alteration:
Encapsulation:**Activity type involving asbestos-containing material**Removal: **Yes**

Enclosure:

Encapsulation: **Yes****Asbestos Work Activity Level**Risk level is: **Moderate****Lead project information (required only when completing a lead project)**

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: **E768383****Project site locations**

Site Location	Start date	Project city	Duration	Unit	Project site location
1	2018/02/04	Victoria	3	Days	Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email: prevnop@WorkSafeBC.com
(if your attachments are over 10 MB, send multiple emails or email us for further instructions)

Fax: 604.276.3247

Mailing address: WorkSafeBC, Prevention Division
PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone: 604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email: prevnop@WorkSafeBC.com



North West
Environmental Group Ltd.

201-415 Gorge Road E
Victoria, B.C. V8T 2W1

Tel: 250-384-9695

Fax: 250-384-9865

E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard
25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Void Space Under Wheelhouse
25 Huron Street, Victoria, BC.

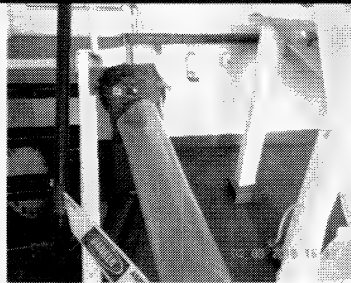
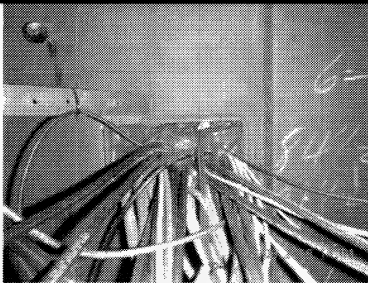
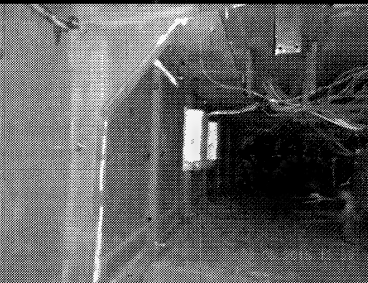
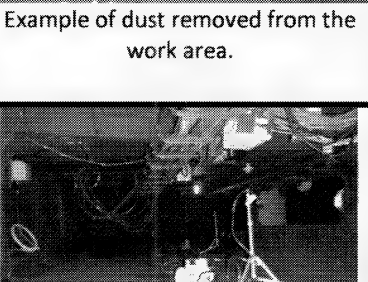
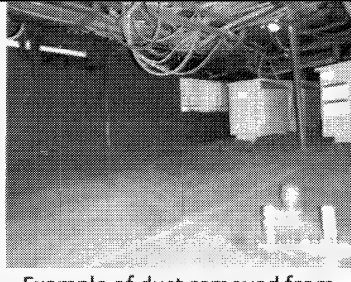
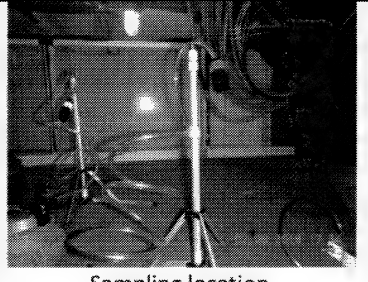
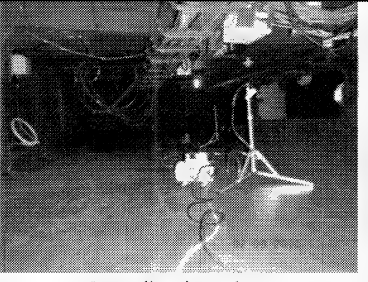
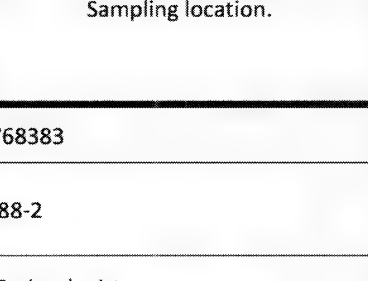
North West Environmental Group Ltd (NWest) Scope of Work:

- Collect occupational samples in personal breathing zone of workers during cleaning activities.
- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 7, 2018
Address of the abatement project	CCGS Bartlett – Void Space Under Wheelhouse 25 Huron Street, Victoria BC
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"
Contractor Scope of Work: Remove asbestos-containing dust from all accessible surfaces. Remove exposed fibrous insulation. Moderate risk clean-up of dusty surfaces. Cables were not handled to remove dust concealed between cables. NOTE: Bundled cables are not free of asbestos-containing materials or dust. Asbestos-containing cables may still be present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working with cable bundles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.	



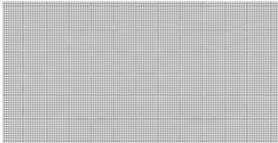
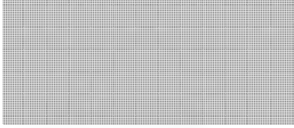
North West
Environmental Group Ltd.

Photo Plate	
	
Negative air unit venting to exterior of ship.	Example of dust cleaned from the surface of cables.
	
Example of dust removed from the work area.	Example of dust removed from the work area.
	
Example of dust removed from the work area. Exposed fibrous insulation removed.	Sampling location.
	
Sampling location.	Sampling location.
Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	Technologist
<p>The presence of asbestos containing cables and dust was found in the Wheelhouse consoles. Some consoles have unsealed penetrations into the Void space, effectively sharing the same air space. Asbestos-containing cables may be present in the Void space.</p> <p>NWest conducted occupational sampling, a final clearance inspection, and final visual inspection. The work was conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".</p>	
<p>Air Samples</p> <p>Occupational and Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Powered Air Purifying Respirators (PAPRs) were used during asbestos abatement activities which have a maximum use concentration of 10 fibres/cubic centimetre of air (f/cc).</p> <p>WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.</p>	

Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699
Date: February 9, 2018

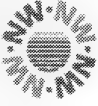
Void Space air samples: Occupational – 34699-23 and 34699-24. Air clearances – 34699-28, 29, and 31. Field blanks – 34699-27 and 34699-30.

Name and signature of the consultant who collected the air clearance samples	 Technologist
Reviewed by	 Senior Project Manager Qualified Person as per OHS Reg 6.1

Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699
Date: February 9, 2018

APPENDIX A – Field Reports

 North West Environmental Group Ltd.		ASBESTOS ABATEMENT CHECKLIST FINAL VISUAL INSPECTION CHECKLIST (FOR USE BY THE ENVIRONMENTAL CONSULTANT)	
Date: <i>Feb 8, 2018</i>		Project number: <i>34699</i>	
Time on/off site:	<i>13:50</i>	NWest representative(s):	<i>KO</i>
Report number:	<i>5</i>	Site address/location:	<i>CCG - Bartlett</i>
Weather:	<i>Windy, Sunny</i>	Contractor/Representative Name:	<i>NA</i> <i>none on site</i>
Client and contact name:	<i>CCG - Bartlett</i> <i>Nath</i>	Number of abatement workers on site:	<i>was 3</i>
Volume of Containment:	<i>< 540 m³</i>	Number of negative air units in use:	<i>1</i>
Work Zone Location:	<i>Void space under wheelhouse</i>		
RESULTS:	FAILED or PASSED. See observations and instructions below.		
Number of Inspection (prior to passing): <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5			
Checked by Representative of Building Owner			
General	Yes (Y)	No (N)	Observations
All equipment removed from area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
All asbestos within scope removed from the substrate	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
All ACM Waste removed from containment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Area is ready for barriers to be removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>after ac cleared</i>
Checked by Representative of Building Owner			
Enclosure	Yes (Y)	No (N)	Observations
Decontamination chambers free of dust, debris and waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Space is clean</i>
Area ready for encapsulation	<input type="checkbox"/>	<input type="checkbox"/>	<i>NA</i>
Negative Air Machines have sufficient DOP tests	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Negative pressure (where applicable) at min. -0.03 in.w.g.	<input type="checkbox"/>	<input type="checkbox"/>	<i>NA</i>
All enclosures intact and properly sealed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Space vacuumed with certified HEPA vacuum only	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Poly wiped clean (free from removable residue)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

NWEST FINAL VISUAL INSPECTION REPORT
SITE ADDRESS/LOCATION:

PROJECT NUMBER:
REPORT NUMBER:

Enclosure	Yes (Y)	No (N)	Observations
Negative air machine (where applicable) wiped down		✓	outside
Discharge hoses clean and free of perforations			NA, outside
All waste removed from space	✓		
Remaining tools and equipment wiped down or bagged		✓	none in space
Window sills and tracks free from debris			NA
Walls and doors free from dust and debris	✓		
Tops of baseboards free from dust and debris			NA
Tops of doors, hinges and frames free from dust and debris	✓		
Door frame pockets free from dust and debris	✓		
Wall/Ceiling mounted fixtures free from dust and debris			NA some dust in difficult to reach areas.
Floors including scaffolding walk boards free from dust and debris	✓		
Instructions for Contractor:			Contractor Representative Signature:
1. Space is clean and free of debris insulation have been removed from walls			
2.			
3.			
4.			

END OF DOCUMENT



North West
Environmental Group Ltd.

Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699
Date: February 9, 2018

APPENDIX B – Analytical Results



North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 09, 2018

Client Job or PO#: NEED

Project number: 34699

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/v	LOQ	Comment
34699-1a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	13:51	14:21	30	13.0	100	76.2	16.56	0.084	V	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-2a	Feb-04-2018	Feb-05-2018	(OCC) Occupational	OCC	BR	2.54	15:10	16:10	60	1.0	100	152.4	1.27	<0.01	VV	<	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse
34699-3a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-4a	Feb-04-2018	Feb-05-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34699-5a	Feb-06-2018	Feb-06-2018	(AC1 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	2.0	100	2456.26	2.55	<0.01	VV	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS™
AIIA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-6a	Feb-06-2018	Feb-06-2018	(AC2 PCM) Laundry Room on Upper Deck	AC	JD	12.86	09:17	12:28	191	1.0	100	2456.26	1.27	<0.01	W	<	
34699-9a	Feb-06-2018	Feb-06-2018	(QC) Field Blank 1	QC	JD	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
34699-11a	Feb-06-2018	Feb-06-2018	(AC5 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	7.5	100	2441.4	9.55	<0.01	V	<	
34699-12a	Feb-06-2018	Feb-06-2018	(AC6 PCM) Wheelhouse C	AC	JD	12.52	09:55	13:10	195	4.0	100	2441.4	5.10	<0.01	W	<	
34699-19a	Feb-07-2018	Feb-08-2018	(AC5 PCM) MCR Stores	AC	JD	12.04	10:10	13:10	180	18.5	100	2167.2	23.57	<0.01	V	<	
34699-20a	Feb-07-2018	Feb-08-2018	(AC6 PCM) MCR Stores	AC	JD	12.04	10:10	13:10	180	14.5	100	2167.2	18.47	<0.01	V	<	
34699-21a	Feb-07-2018	Feb-08-2018	(AC7 PCM) MCR Panel Control	AC	JD	12.04	10:10	13:10	180	18.0	100	2167.2	22.93	<0.01	V	<	
34699-22a	Feb-07-2018	Feb-08-2018	(AC8 PCM) MCR Control Panel	AC	JD	12.04	10:10	13:10	180	18.5	100	2167.2	23.57	<0.01	V	<	
34699-23a	Feb-07-2018	Feb-08-2018	(OCC) Void Space of Bartlett	OCC	JD	2.6	10:40	11:10	30	5.5	100	78	7.01	0.035	V	<	PAPR / Wiping and Vacuuming Surfaces
34699-24a	Feb-07-2018	Feb-08-2018	(OCC) Void Space of Bartlett	OCC	JD	2.6	10:40	11:40	60	7.5	100	156	9.55	0.024	V	<	PAPR / Wiping and Vacuuming Surfaces
34699-26a	Feb-07-2018	Feb-08-2018	(QC PCM) MCR	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-27a	Feb-07-2018	Feb-08-2018	(QC) FB OCC	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34699-28a	Feb-08-2018	Feb-08-2018	(AC1) Voidspace Below Wheelhouse	AC	BR	16.44	13:53	16:10	137	1.0	100	2252.28	1.27	<0.01	W	<	
34699-29a	Feb-08-2018	Feb-08-2018	(AC2) Voidspace Below Wheelhouse	AC	BR	16.43	13:57	N/A	N/A	0.0	100	N/A	N/A	N/A			Filter Blow Out, No Result Possible
34699-30a	Feb-08-2018	Feb-08-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

2/3

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34699-31a	Feb-08-2018	Feb-08-2018	(AC3) Voidspace Below Wheelhouse	AC	BR	13.26	13:57	16:59	182	1.0	100	2413.32	1.27	<0.01	W	<	

*** Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

3/3

000727

Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699
Date: February 9, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

2/1/2018

WorkSafeBC Online - Notice of Project

WORK SAFE BC

WORKING TO MAKE A DIFFERENCE

Notice of ProjectNOP Confirmation number: **E768383****Owner information**

Account #: _____
 Name: **Victoria Coast Guard Base**
 Country: **Canada**
 Address: **25 Huron Street**

 City: **Victoria**
 Province: **British Columbia**
 Postal code: _____

Prime contractor or employer information

Account #: _____
 Name: _____
 Country: **Canada**
 Address: _____

 City: _____
 Province: **British Columbia**
 Postal code: _____

Person in charge of project

Name: _____
 Job title: **Operations Manager**
 Email: **info@haz-mat.ca**
 Phone number: **(250) 891-8611** Ext: _____

Person completing this form

Name: _____
 Email: **info@haz-mat.ca**
 Phone number: **(250) 891-8611** Ext: _____

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents: **Yes**
 Delivery method: **E-Mail**
 Sent date: **2018/02/01**

NOP Confirmation number: **E768383****Asbestos, Lead or Other Similar Exposure Work Activity**

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least **48 hours** notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #: **968887**
 Name: **Canadian HAZ-MAT Environmental Ltd**
 Country: **Canada**
 Address: **1111 Tulip Ave**

 City: **Victoria**
 Province: **British Columbia**
 Postal code: **V8Z 7Z2**

Consulting firms

Name(s): **Northwest Environmental**

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments: **Yes**
 Delivery method: **E-Mail**
 Sent date: **2018/02/01**

Planned activity for a building or structure that contains asbestos materials or where asbestos-containing material has been processed, manufactured or stored

Demolition: _____
 Repair: **Yes**

Hours of work

Hours of work from: **08:00**

Hours of work to: **16:00**Number of workers per shift
Total: **3**Renovation or
alteration:
Encapsulation:**Activity type involving asbestos-containing material**Removal: **Yes**
Enclosure:
Encapsulation: **Yes****Asbestos Work Activity Level**Risk level is: **Moderate****Lead project information (required only when completing a lead project)**

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: **E768383****Project site locations**

Site Location	Start date	Project city	Duration	Unit	Project site location
1	2018/02/04	Victoria	3	Days	Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email: prevnop@WorkSafeBC.com
(if your attachments are over 10 MB, send multiple emails or email us for further instructions)

Fax: 604.276.3247

Mailing address: WorkSafeBC, Prevention Division
PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone: 604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email: prevnop@WorkSafeBC.com

Prepared for: Canadian Coast Guard Services

2018

CCGS BARTLETT

**Limited Hazardous Materials
Risk Assessment and Safe Work Procedures:
2018 Dust Cleanup: Various Compartments**

Project: 34699 RA1 V1.0
Issue date: February 2, 2018



North West
Environmental Group Ltd.

201 – 415 Gorge Road East
Victoria, BC
V8T 2W1

CCGS BARTLETT
February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
2018 Dust Cleanup: Various Compartments

Contents

1	Background and Scope of Work	1
1.1	Wheelhouse and Consoles	2
1.2	Laundry Room	3
1.3	Void Space Under Wheelhouse	4
1.4	MCR Console	5
1.5	MCR Stores	5
1.6	Additional Requirements	6
2	Photo Plate	8
3	Validation	10
	Appendix A. Analytical Reports	11



North West
Environmental Group Ltd.

CCGS BARTLETT
February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1 Background and Scope of Work

North West Environmental Group Ltd. (NWEst) was retained by the Canadian Coast Guard (CCG, the Client) to conduct a limited hazardous materials assessment (LHMA) in accordance with WorkSafeBC regulatory requirements outlined in the BC Occupational Health and Safety (OHS) Regulation Section 20.112 – Hazardous Materials. The LHMA was conducted by NWEst representative Jen Taptuna on January 26, 2018.

Various areas were found to have asbestos-containing cables. The presence of these cables triggered an assessment of latent dust in Wheelhouse console casings. Concurrently, damage to an asbestos-containing bulkhead panel was identified by CCG crew in the Laundry Room. An abatement contractor cleaned the Laundry Room in all accessible areas, excluding behind the washers and dryers due to inaccessibility at the time. As assessment of the dust in these two areas identified the presence of asbestos fibres in excess of expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (IATL).

The scope of work was provided as follows in the request for quote with additional details provided to the attending technician at the time of this assessment.

Asbestos in latent dust in the Laundry room fell in the moderate range ($>10,000$ to $100,000$ structures per square centimetre (s/cm^2), warranting additional cleaning efforts behind the washers and dryers. Asbestos in latent dust in the Wheelhouse consoles fell in the high range ($>100,000$ s/cm^2). It is suspected that the asbestos is a result of pulling asbestos-containing cabling throughout the years.

Note that there is no accepted, standardized method of determining the mobility of asbestos fibres from latent dust into the air. The rate of mobility is dependent on various factors. The main factor for mobility on the vessel is vibration and movement during normal at-sea operations, therefore, it has been deemed prudent to remove all loosely adhered and safe to access dust from these areas.

Bulk sampling was undertaken of stored gasket materials in the Machinery Control Room Stores (MCR Stores). Chrysotile asbestos was identified in rope gasket/packing materials. These materials have been stored exposed in the MCR Stores for an unknown length of time.

The following document presents a risk assessment and provides safe work procedures for removing asbestos-containing dust from the following locations:

1. Wheelhouse and consoles.
2. Laundry Room, specifically behind the washers and dryers.
3. Void space beneath the Wheelhouse.
4. MCR console.
5. MCR stores.

Risk assessments and general procedures are based on our understanding of the scope of work and the methods and means intended to be used by the Abatement Contractor. Should the work activity type differ from what is noted herein, a new risk assessment may be required for that activity.

CCGS BARTLETT
February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
2018 Dust Cleanup: Various Compartments

1.1 Wheelhouse and Consoles

Scope of Work

- Remove loosely adhered dust from all surfaces within all consoles.
- Clean all surfaces in the Wheelhouse.
- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed. **Fragile and sensitive equipment present.** Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

1. *Moderate* risk cleanup activities
 - CCG crew to isolate electrical components prior to cleanup work.
 - Use barrier tape and asbestos warning signs at all Wheelhouse entrances. Unprotected workers are not permitted in the work area during these work activities.
 - Seal any HVAC vents/registers.
 - HEPA vacuum and bag curtains and other removable porous materials that will be reused. These items will be laundered prior to reuse.
 - 6-mil poly drop sheet around console access to prevent entrainment of dust into the carpet.
 - Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within consoles. Damp wipe non-porous surfaces. **DO NOT DAMP WIPE CABLES.** Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
 - HEPA vacuum and wipe all surfaces within the Wheelhouse to remove loosely adhered latent dust. Binders/books: only HEPA vacuum the outer surfaces. **CAUTION:** take care not to change any settings on the control panels.
 - HEPA vacuum the carpet using a carpet head attachment.
 - Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
 - Do not allow waste and dust to accumulate during the work.
 - Workers decontaminate with tempered clean and soapy water.
 - NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



North West
Environmental Group Ltd.

CCGS BARTLETT
February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1.2 Laundry Room

Scope of Work

- Remove loosely adhered dust from all surfaces behind the washers and dryers.
- Clean all surfaces in the Laundry Room.
- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed.

Contractor Requirements

Remove loosely adhered dust from behind washers and dryers and clean all Laundry Room surfaces

2. Moderate risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the Laundry Room entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- A pop-up or small enclosure may be constructed in the Alleyway outside the Laundry Room to create more work space. If used, it must not impede worker access through the Alleyway. Coordinate with CCG crew.
- Dismount the washers and dryers to access the space behind them.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces on the back sides of the units and the bulkhead and deck behind. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- NWest will conduct an inspection at this time, prior to re-installation of the units.
- Upon successful inspection, reinstall units.
- HEPA vacuum exposed surfaces of the Laundry Room (i.e. do not open millwork to clean surfaces inside as these were cleaned previously).
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake a final inspection and air clearance sampling.



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1.3 Void Space Under Wheelhouse

Scope of Work

- Remove loosely adhered dust from all surfaces.
- Remove all dust and debris from deck.
- **Hazards:** Asbestos-containing dust. Vitreous fibres from exposed Fibreglass-type insulation. Red primer assumed to contain lead. Enclosed space with a single entrance/exit.

Contractor Requirements

Remove loosely adhered dust from all surfaces.

3. Moderate risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance to the void space. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Install a certified negative air unit (NAU) to draw air out of the space. Place it in such a manner as it does not impede regular or emergency access/egress of the space. The intent is to pull makeup air into all areas of the space, therefore, the extraction duct or NAU should be placed as far from the entrance as practicable to avoid short circuiting.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces in the space. Damp wipe non-porous surfaces. **DO NOT DAMP WIPE CABLES.** Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- Work should start from the entrance and move into the space to reduce the amount of contamination that accumulates on worker's coveralls.
- Note: additional effort may be required to remove all dust from high contact surfaces such as the deck (i.e. remove all dust, not just loosely adhered material).
- Due to the small volume of the work area and anticipated increased concentration of fibres rendered airborne during cleaning activities, workers must utilize **powered air purifying respirators (PAPRs)** equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



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CCGS BARTLETT
February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1.4 MCR Console

Scope of Work

- Remove loosely adhered dust from all surfaces within the console.
- Remove loosely adhered dust from the deck behind the console and from cables running out of the console, up to the first cable tray bracket.
- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

4. Moderate risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- 6-mil poly drop sheet around console access.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within and behind console. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum the deck around console openings.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.5 MCR Stores

Scope of Work

- Remove box containing asbestos rope gaskets/packing. Remove any visually similar materials, after confirming with CCG these additional materials can be disposed.
- Clean the shelving unit and adjacent surfaces within three feet.



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CCGS BARTLETT
February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

5. *Moderate* risk cleanup activities

- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Remove identified bulk materials and place in 6 mil poly bags. Dispose as asbestos waste.
- Remove from the shelving unit each piece of equipment or material to be kept. HEPA vacuum all exterior surfaces and place in the MCR.
- When all items are removed from the shelving unit, HEPA vacuum and damp wipe the shelving unit.
- HEPA vacuum and damp wipe all surfaces behind and adjacent to the shelving unit.
- NWest will undertake an inspection for cleanliness at this time.
- Upon successful inspection, items can be replaced.
- HEPA vacuum the deck.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.6 Additional Requirements

- If suspect materials are discovered during abatement activities that have not been included in this risk assessment, work must stop and the material assessed by a qualified person.
- Submit Notice of Project complete with site specific work procedures to WorkSafeBC no less than 48 hours prior to commencing work
- All HEPA vacuums and NAUs must be certified (DOP/PAO tested) within 12 months of use. Recommend on-site certification to ensure units are functioning properly after transport.



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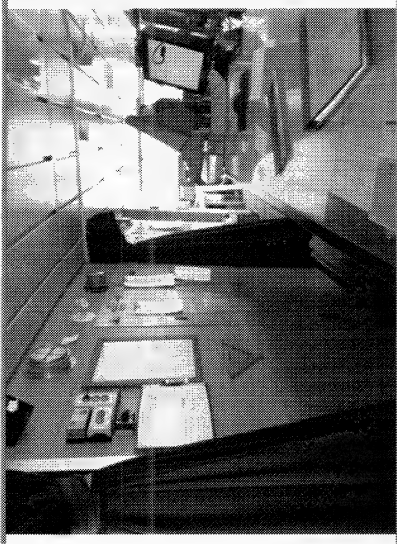
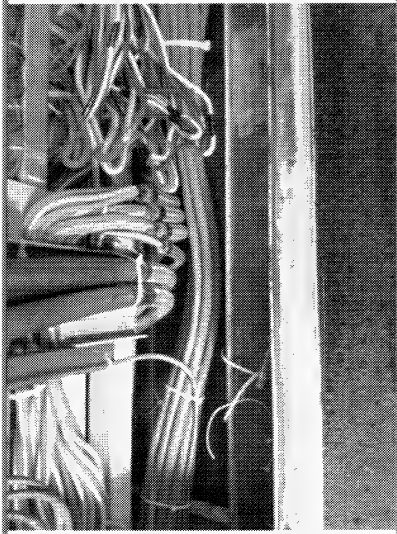

CCGS BARTLETT
February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
2018 Dust Cleanup: Various Compartments

- Provide occupational health and safety program including exposure control plans for asbestos, lead, vitreous fibres, and silica as well as procedures for de-energization and lockout if required.
- Provide all first aid for contractor workers.
- Other personal protective equipment (PPE) such as safety eyewear, hard hats, or face protection may be required. Site conditions may necessitate the use of alternative respirator cartridges (e.g. nearby welding, chemical applications, or vehicle exhaust). For the purposes of handling the above identified hazardous materials, all cartridges must utilize P-100 particulate filters, at minimum.
- No wet wiping, wire brushing, or application of liquids to electrical cabling.
- Contractor shall coordinate schedule around the crew's schedule including fueling events, maintenance, practice drills and any other reasonably foreseeable activity. Contractor is responsible for coordination with Chief Engineer and Chief Steward.
- All air sampling to be conducted by NWest.





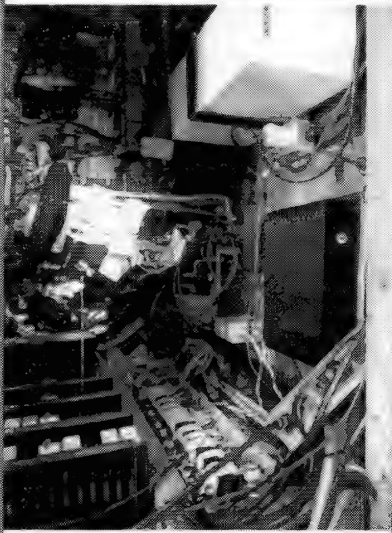
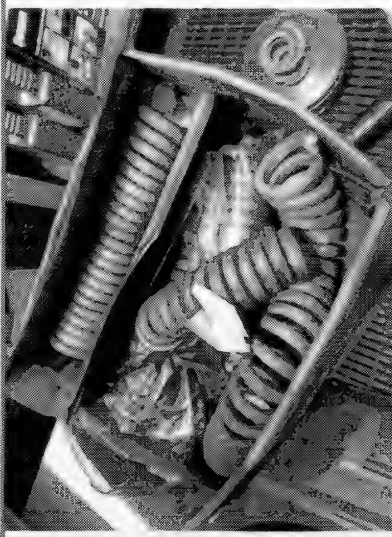


2 Photo Plate

		
<p>Unit/Location: Wheelhouse Description: Overview Comments: Curtains and other porous items meant for reuse will be HEPA vacuumed, bagged, and laundered. HEPA vacuum and wipe all surfaces.</p>	<p>Unit/Location: Wheelhouse console Description: Overview of typical console Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.</p>	<p>Unit/Location: Laundry Room Description: Overview Comments: Units are framed into place.</p>



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<p>Unit/Location: Laundry Room</p> <p>Description: Dust behind washers and dryers to be cleaned.</p> <p>Comments: Remove units and clean backsides of units and the bulkhead and deck.</p>	<p>Unit/Location: Void Space Under Wheelhouse</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum and wipe to remove loosely adhered dust.</p>	<p>Unit/Location: Void Space Under Wheelhouse</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum and wipe to remove loosely adhered dust. Fibreglass-type insulation present.</p>
		
<p>Unit/Location: MCR</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust.</p> <p>Do not wet/damp wipe cables.</p>	<p>Unit/Location: MCR</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust.</p> <p>Do not wet/damp wipe cables.</p>	<p>Unit/Location: MCR Stores</p> <p>Description: Asbestos-containing rope gaskets/packing stored exposed.</p> <p>Comments: Dispose of ACM, clean shelving and adjacent surfaces within 2 feet.</p>

CCGS BARTLETT
February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
2018 Dust Cleanup: Various Compartments

3 Validation

All work undertaken was conducted according to standardized methods and otherwise in accordance with protocols and procedures currently utilized by occupational hygiene professionals operating in this jurisdiction. No assessment was requested or made of other potential areas of asbestos or lead contamination that may or may not be present within the vessel.

Signature on file



Project Manager
Report author

Signature on file



Senior Project Manager
Qualified Person as per OHS Reg 6.1
Report review



North West
Environmental Group Ltd.

CCGS BARTLETT
February 2, 2018

Appendix A. Analytical Reports

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
2018 Dust Cleanup: Various Compartments



North West
Environmental Group Ltd.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Officer
Sent: February-03-18 6:40 PM
To: John Benckhuysen; Joseph Van Der Sande; CCGS-NGCC, Bartlett Logistics Officer
Subject: FW: Bartlett Background Testing Update Feb 3
Attachments: 34694 AA2 V1.0 2018-02-02 - CCGS Bartlett Background Testing.pdf

Hello,

Please find attached the preliminary Air Test Results for Asbestos. The results all look good so far. If you have any questions, please let me know.

Chris Couch

Acting Chief Officer, Red Crew, CCGS Bartlett

Email: BartlettCHO@ccgs-ngcc.gc.ca
Chief Officer Cell: [REDACTED]
Telus Tellular: [REDACTED]
Victoria Base Landline: 250 480 2692
Iridium Satellite: [REDACTED]
Fax Satellite: [REDACTED]

Mailing Address:
25 Huron Street
Victoria BC
V8V 4V9

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: February-03-18 2:08 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: FW: Bartlett Background Testing Update Feb 3

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: [REDACTED]
Sent: February-03-18 1:50 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: Bartlett Background Testing Update Feb 3

Hi Matt, following is an update to our proposal for background testing on the Bartlett.

Preliminary air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected in 10 locations throughout the vessel on February 2, 2018 while the vessel was docked alongside, occupied and with systems (e.g. heating and ventilation) operational. All air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). WorkSafeBC has determined the exposure limit for asbestos fibres to be 0.1 fib/ml for an 8 hour day, however, as personnel are on the ship for 24 hours, this is adjusted to 1/10th of that amount, or 0.01 fib/ml (BCOHS 5.50 Extended work periods).

While initial results are encouraging (in that all were reported to be <0.01 fib/ml), the limit of quantitation (LOQ) of the method is not satisfied until enough fiber loading is achieved (100-1300 fib/mm²). In other words, additional ambient air sampling with sampling times of approximately 10 hours at 2.5 LPM is recommended, although if the atmosphere is sufficiently low in fibers-this fiber loading may still be unachievable. However, due to the potential concern and questions likely to be raised by affected parties-we recommend that we take longer ambient samples to be prudent. We are undertaking this follow up testing today (Feb 3).

The ambient air sampling will result in additional costs as we had not included overtime rates in our original proposal. We will honour the lower air sample analysis cost of [REDACTED] for additional samples required due to site conditions. I estimate today's sampling will add approximately \$3450 to the original proposal of \$7712 with an estimated total of \$11,162, excluding GST.

Results from Feb 2 Air Testing

All fibre concentrations for samples collected on Feb 2 were below the limit of detection (0.01 fib/ml). Lab report attached.

Other Updates

Wipe samples collected Feb 2 will be delivered to the courier today for Monday arrival at the laboratory. We anticipate results by end of day Tuesday. I had been told there was weekend pickup, but it looks like that was incorrect. I will keep you apprised of any changes.

Please let me know if you have any questions.

Best,



[REDACTED]
Project Manager
North West Environmental Group Ltd.

C. [REDACTED] (Primary)

P. 250-384-9695 ext. [REDACTED] | F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC, V8T 2W1

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North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Background Testing

Date: February 02, 2018
Client Job or PO#: NEED
Project number: 34694

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/v	LOQ	Comment
34694-3a	Feb-02-2018	Feb-02-2018	(AMB) Control Room	AMB	JD	2.04	12:05	14:12	127	0.5	100	259.08	0.64	<0.01	VV	<	
34694-4a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley Aft	AMB	JD	5.12	11:33	14:46	193	4.0	100	988.16	5.10	<0.01	VV	<	
34694-5a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley FWD	AMB	JD	5.12	11:42	14:47	185	3.0	100	947.2	3.82	<0.01	VV	<	
34694-6a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Oilers Aft Cabin	AMB	JD	2.04	11:22	14:01	159	2.0	100	324.36	2.55	<0.01	VV	<	
34694-7a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Winchman's Cabin	AMB	JD	2.61	11:19	13:58	159	3.0	100	414.99	3.82	<0.01	VV	<	
34694-8a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Alley	AMB	JD	5.1	11:07	16:44	337	2.5	100	1718.7	3.18	<0.01	VV	<	
34694-9a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Logistic Officer's Cabin	AMB	JD	2.5	10:59	13:56	177	3.5	100	442.5	4.46	<0.01	VV	<	
34694-10a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Lounge	AMB	JD	2.8	10:55	13:47	172	3.5	100	481.6	4.46	<0.01	VV	<	
34694-11a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Alley	AMB	JD	5.12	11:54	16:58	304	1.5	100	1556.48	1.91	<0.01	VV	<	
34694-12a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Chief Officer's Cabin	AMB	JD	2.36	11:47	14:19	152	5.5	100	358.72	7.01	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34694-13a	Feb-02-2018	Feb-02-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34694-23a	Feb-02-2018	Feb-02-2018	(AC) Poop Deck Lounge	AC	JD	13.56	14:27	16:55	148	6.5	100	2006.88	8.28	<0.01	V	<	

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibres/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



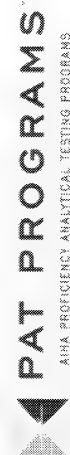
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: February 25, 2018 3:36 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Subject: FW: Dust Wipe Samples

FYI. I didn't know that personal exposure limit testers are available. They may be of value to confirm whether an area we're working in (or sleeping in) is contaminated with ACM.

Note that Gabe is working on buying a couple of air sampling machines for Marine Engineering. Maybe we want to buy a couple for the ship? (Don't know cost)

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: McMillan, Cody [mailto:cody.mcmillan@dfo-mpo.gc.ca]
Sent: February-06-18 1:05 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Re: Dust Wipe Samples

One thing to research is personal exposure limit testers, they are little devices you can clip on your belt and will let you know if it senses asbestos

Cody McMillan
Marine Engineering/Ingénierie Navale
(250) 217 3480

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: Tuesday, February 6, 2018 4:01 PM
To: McMillan, Cody
Subject: RE: Dust Wipe Samples

Hi Cody,

Things are proceeding. The contractor is currently working the MCR and MCR stores. ER ACM thermocouple wires have been cutback and sealed.

[REDACTED] from NWE has just collected the air samples from bridge/laundry so we should have answers for those two spaces (this afternoon). If good the two spaces will be back in operation today and the bridge void will be prepped for work tomorrow morning.

I have asked NWE for a little more details on the air test results from the weekend (no answer yet). Basically what their opinion is on the levels, i.e. it meets WorkSafe permissible exposure limit PEL but without an actual f/ml reading on the results the readings don't mean too much to me. Would ship vibration and movement push us over the limit or are we sufficiently low it would not be a concern (the precision of the results is the maximum PEL for continuous occupied spaces, I would like the profession opinion not just my interpretation of the results). We did run engines and generators

at varying speeds for apx 2 hours during both sampling periods. Enough vibration was generated it made the computer monitors in my cabins vibrate.

Asked also custodial work performed onboard but since I didn't get a quick response yet I have the ok from the Captain and we are purchasing proper abatement quality heap vacuums to take the place of the non-hepa dyson hand-held vacs. On the off chance we disturb something unknown onboard I would prefer our vacuums do not just make the dust airborne.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: McMillan, Cody [<mailto:cody.mcmillan@dfo-mpo.gc.ca>]
Sent: February-06-18 12:42 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Re: Dust Wipe Samples

Thanks Matt. Sounds like things are moving along nicely, how's it look from your prospective?

Cody McMillan
Marine Engineering/Ingénierie Navale
(250) 217 3480

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: Tuesday, February 6, 2018 12:47 PM
To: Chaikin, Gabriel; McMillan, Cody
Cc: CCGS-NGCC, Bartlett Captain
Subject: Dust Wipe Samples

Hi,

The dust wipe samples (taken as part of the background sampling plan) from the HVAC return, Engine Room and MCR were held up at the border.... Instead of having result today it will most likely be tomorrow.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: February 25, 2018 3:51 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Subject: FW: Bartlett Asbestos Update - ACM Background - Context Commentary
Attachments: Background Air Testing Results.pdf; Background Testing proposal.pdf; Initial WH Wire Insulation Test Results.pdf; Laundry Room Air Test Results after first cleanup.pdf; Laundry Room Dust Test Results.pdf; NWE Risk Assessment and Safe Work Procedures for abatement work.pdf; Pyrometer Wire and Packing Test Results.pdf; Wheelhouse Consol Dust Test Results.pdf

Importance: High

FYI
Ross

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: February-05-18 8:03 AM
Cc: Chaikin Gabriel
Subject: Bartlett Asbestos Update

Hi Ross,

[REDACTED] I would like to update you on the asbestos situation onboard.

The wire insulation you had tested at the end of you patrol came back positive for Chrysotile asbestos in the insulation (not the insulation covering).

We had NWE come in and perform dust sampling in the wheelhouse consoles to check for contamination. IIR submitted prior to receiving results. There was a mistake at the lab and the first set of samples were not analyzed with the correct procedure.

During a short sea trial period we contacted the dock in way of the aft port hole in the laundry room. Minor deformation of the shell plating but the movement split a bulkhead seam and caused a crack in one of the ACM panels in the laundry room. The space was closed off after discover and Canadian Hazmat called in to clean up and encapsulate. IIR submitted. Post clean-up air test proved good but some dust behind the washing machines was not cleaned so samples were taken to determine if additional cleaning was required. This happened at the same time we found out about the mistake at the lab for our bridge dust samples. Consoles resampled and results were expected the afternoon after we sailed.

First set of results were received and the dust behind the washing machines showed moderate contamination above normally experienced levels (International Asbestos Testing Laboratories) having not received the results from the bridge the plan was to proceed to the Port Hardy to have additional work performed. We received the results from the Bridge a couple hours later and they return with high levels of contamination in the dust present on the consoles. The decision was made to return to Victoria for further testing and development of an abatement plan.

NWE developed a Background Sampling plan which included dust wipes in the MCR,ER and HVAC return air duct as well as 10 air sampling locations throughout the ship. We are still awaiting the results of the dust wipes (Tuesday morning/afternoon).

The air sampling results are attached. During both days of air testing the ship was occupied with normal traffic, ventilation systems were operated as per normal, and the main engines and generators were run for apx 2 hours each day to increase vibration throughout the ship. As per NWE: As before (the first days lower volume samples) all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

Additional ACM identified: the wiring for the old pyrometer display contains 30% Chrysotile. Packing storage in the STBD MCR some of the old white packing contains 30% Chrysotile.

NWE is providing oversight and air clearance for the following abatement jobs performed by Canadian Hazmat:

- wheelhouse including consoles
- wheelhouse void as the console wire ways to this space are not sealed and the space contains significant unidentified dust
- laundry room (moving machines to continue wipe down)
- ER pyrometer wire removal
- MCR console dust and pyrometer wire removal
- STBD MCR stores disposal of packing and cleanup of adjacent area

The first day of abatement was yesterday with work proceeding on the bridge. As now the anticipated completion time for the clean-up is Friday.

Please let me know your thoughts, comments or concerns.
I have cc'd Gabriel as he is taking over from Cody for the week.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca



**North West
Environmental Group Ltd.**

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Background Testing

Date: February 03, 2018
Client Job or PO#: NEED
Project number: 34694

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	V/vv	LOQ	Comment
34694-3a	Feb-02-2018	Feb-02-2018	(AMB) Control Room	AMB	JD	2.04	12:05	14:12	127	0.5	100	259.08	0.64	<0.01	W	<	
34694-4a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley Aft	AMB	JD	5.12	11:33	14:46	193	4.0	100	988.16	5.10	<0.01	W	<	
34694-5a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley FWD	AMB	JD	5.12	11:42	14:47	185	3.0	100	947.2	3.82	<0.01	W	<	
34694-6a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Oilers Aft Cabin	AMB	JD	2.04	11:22	14:01	159	2.0	100	324.36	2.55	<0.01	W	<	
34694-7a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Winchman's Cabin	AMB	JD	2.61	11:19	13:58	159	3.0	100	414.99	3.82	<0.01	W	<	
34694-8a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Alley	AMB	JD	5.1	11:07	16:44	337	2.5	100	1718.7	3.18	<0.01	W	<	
34694-9a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Logistic Officer's Cabin	AMB	JD	2.5	10:59	13:56	177	3.5	100	442.5	4.46	<0.01	W	<	
34694-10a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Lounge	AMB	JD	2.8	10:55	13:47	172	3.5	100	481.6	4.46	<0.01	W	<	
34694-11a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Alley	AMB	JD	5.12	11:54	16:58	304	1.5	100	1556.48	1.91	<0.01	W	<	
34694-12a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Chief Officer's Cabin	AMB	JD	2.36	11:47	14:19	152	5.5	100	358.72	7.01	<0.01	V	<	

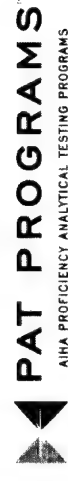
As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314 1/3

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
34694-13a	Feb-02-2018	Feb-02-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34694-23a	Feb-02-2018	Feb-02-2018	(AC) Poop Deck Lounge	AC	JD	13.56	14:27	16:55	148	6.5	100	2006.88	8.28	<0.01	V	<	
34694-24a	Feb-03-2018	Feb-03-2018	(AMB) Boat Deck Chief Officer (Location 1)	AMB	JD	2.47	08:26	18:42	616	4.5	100	1521.52	5.73	<0.01	WV	<	
34694-25a	Feb-03-2018	Feb-03-2018	(AMB) Boat Deck Alley (Location 2)	AMB	JD	2.54	07:55	17:43	588	4.0	100	1493.52	5.10	<0.01	WV	<	
34694-26a	Feb-03-2018	Feb-03-2018	(AMB) Poop Deck Lounge (Location 3)	AMB	JD	2.54	07:50	17:40	590	4.5	100	1498.6	5.73	<0.01	WV	<	
34694-27a	Feb-03-2018	Feb-03-2018	(AMB) P. Deck Logistics Officer Cabin (Location 4)	AMB	JD	2.54	08:06	17:55	589	5.5	100	1496.06	7.01	<0.01	V	<	
34694-28a	Feb-03-2018	Feb-03-2018	(AMB) Poop Deck Alley (Location 5)	AMB	JD	2.54	07:57	17:45	588	7.5	100	1493.52	9.55	<0.01	V	<	
34694-29a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Winchman's Cabin (Location 6)	AMB	JD	2.54	08:16	18:00	584	6.0	100	1483.36	7.64	<0.01	V	<	
34694-30a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Oilers Aft Cabin (Location 7)	AMB	JD	2.54	08:12	17:51	579	15.0	100	1470.66	19.11	<0.01	V	<	
34694-31a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Alleyway Aft (Location 8)	AMB	JD	2.54	08:05	17:49	584	2.0	100	1483.36	2.55	<0.01	WV	<	
34694-32a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Alley FWD (Location 9)	AMB	JD	2.54	08:01	17:45	584	2.0	100	1483.36	2.55	<0.01	WV	<	
34694-33a	Feb-03-2018	Feb-03-2018	(AMB) Above Tank Top Control Room (Location 10)	AMB	JD	2.52	08:21	18:04	583	7.0	100	1469.16	8.92	<0.01	V	<	
34694-34a	Feb-03-2018	Feb-03-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34694-35a	Feb-03-2018	Feb-03-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

*** Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibres/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



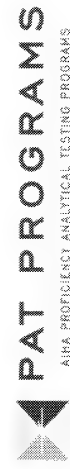
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

3/3



**North West
Environmental Group Ltd.**

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
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e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett Wheelhouse Wire Testing 2018-01-22

Date: January 24, 2018
Client Job or PO#: NEED
Project number: 34596

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-1b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Green)	Wire Wrap - Green	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-1b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Green)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	
34596-2b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Wrap - Black	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-2b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	
34596-3b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-3b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Insulation - White	60	Chrysotile	70	Synthetic	30	
34596-4b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-4b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Insulation - White	60	Chrysotile	70	Synthetic	30	
34596-5b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Wrap - Dark Grey	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-5b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 - Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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LAB# 202314

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-6b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Wrap - Red	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-6b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	
34596-7b Layer 1	Sbd Bridge Wing Console	Jan-24-2018	JD	Wire (White)	Wire Wrap - White	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-7b Layer 2	Sbd Bridge Wing Console	Jan-24-2018	JD	Wire (White)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 – Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust
Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6435039
Client No.:34659-1b

Location: Laundry Behind Washer
Area (cm²): 100
Density (s/mm³): 61.5

Concentration (s/cm³): 14800
Asbestos Type(s): Chrysotile Amosite

Lab No.:6435040
Client No.:34659-2b

Location: (QC) Process Blank
Area (cm²): Blank
Density (s/mm³): <7.69

Concentration (s/cm³): NA
Asbestos Type(s): None Detected

Lab No.:6435041
Client No.:34659-3b

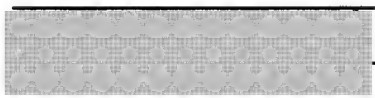
Location: (QC) Batch Blank
Area (cm²): Blank
Density (s/mm³): <7.69

Concentration (s/cm³): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018
Date Analyzed: 01/31/2018

Signature:
Analyst:



Approved By:

A handwritten signature in black ink, which appears to read "Frank Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 2:54:39

Page 1 of 3

000757



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And Clearances
Project No.: 34659

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

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Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 1/31/2018 2:54:39

Page 2 of 3

000758



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And Clearances
Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435039
Client No.:34659-1b

Volume Filtered (mL):2
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):1850

Area Sampled (cm²):100
Location:Laundry Behind Washer

Asbestos Structures: 8

Structures < 5 Microns: 7
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 61.5
Structure Concentration (s/cm²): 14800
Asbestos Type(s):
Chrysotile
Amosite

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:1

Structure Density (s/mm²):7.69
Structure Concentration (s/cm²):1850
Non-Asbestos Type(s):
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:12:42:33PM

Lab No.:6435040
Client No.:34659-2b

Volume Filtered (mL):7
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):NA

Area Sampled (cm²):Blank
Location:(QC) Process Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018
Date Analyzed: 01/31/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 1/31/2018 2:54:39



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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust
Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435041

Client No.: 34659-3b

Volume Filtered (mL): 7

Dilution Factor (mL): 50

Grid Openings: 10

Opening Area (mm²): 0.013

Area Analyzed (mm²): 0.130

Sensitivity (s/mm²): 7.69

Detection Limit (s/cm²): NA

Micrograph Number:

EDXA Spectrum ID:

Area Sampled (cm²): Blank

Location: (QC) Batch Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected

Structures ≥ 5 μm: None Detected

Structure Density (s/mm²): <7.69

Structure Concentration (s/cm²): NA

Asbestos Type(s):

None Detected

Filter Type: MCE

Filter Size (mm²): 962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <7.69

Structure Concentration (s/cm²): NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 2:54:39

Page 2 of 3

000761



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659



**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Bulk Sample Report

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

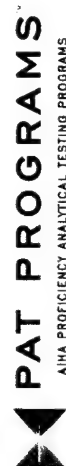
Project: CCGS Bartlett: Background Testing

Date: February 01, 2018

Client Job or PO#: NEED

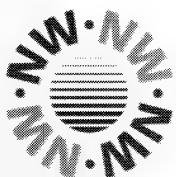
Project number: 34694

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34694-1b	MCR Stores	Feb-01-2018	JD	Rope Gasket (~1.5cm)	White / Grey	100	Chrysotile	30	Synthetic (50%) Non-Fibrous (20%)	70	
34694-2b	Engine Room	Feb-01-2018	BR	Wiring - Black, ~1cm	White / Black	100	Chrysotile	30	Cellulose (30%) Synthetic (10%) Non-Fibrous (30%)	70	



ATMA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314



**North West
Environmental Group Ltd.**

201 – 415 Gorge Road East
Victoria BC V8T 2W1

Tel: 250-384-9695
Fax: 250-384-9865
e-mail: jtaptuna@nwest.bc.ca

File No. 34694 P1 V1.0

Via Email

1 February 2018

Matt Jackson
Canadian Coast Guard
20 Huron Street
Victoria, BC, V8V 4V9

Attention: Matt Jackson, Chief Engineer
Re: Proposal for Background Asbestos Testing on the CCGS BARTLETT

North West Environmental Group Ltd. (NWest) is pleased to present a proposal for background testing throughout the vessel to look for evidence of the spread of asbestos contamination. The Bartlett is alongside at 20 Huron Street in Victoria, BC. NWest will undertake surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether fibres have been rendered airborne during normal ship use while alongside.

Scope of Work

The ambient air sampling and surface wipe sampling plan is summarized in the following table. Note that sample quantities are approximate as site conditions may require additional sample collection.

DECK	LOCATION	AMBIENT AIR SAMPLING	SURFACE WIPE SAMPLING
Above Tank Top	Engine Room	0	4
	Control Room	1	2
Upper Deck	Alleyway	2	0
	Bosun's Cabin	1	0
	Crew Cabin	1	0
Poop Deck	Alleyway	1	0
	2 nd Officer's Cabin	1	0
	Lounge	1	
	Return Air Vent	0	1
Boat Deck	Alleyway	1	0
	Chief Officer's Cabin	1	0
Estimated totals		10 + 2 field blanks	7 + 2 field blanks

Estimate

NWest will complete the above noted scope of work on a Time and Materials basis, estimated to be **\$7712**, taxes not included. Site work will be conducted during a work week day, during regular hours (8 am- 5 pm). Costs for work conducted on overtime, weekend and or statutory holidays is not included. A breakdown of budget estimate is as follows.



**North West
Environmental Group Ltd.**

Background Asbestos Testing
CCGS BARTLETT

NWest Project No. 34694
February 1, 2018

ITEM	TASK	UNITS (ESTIMATE)	RATE	EXTENTION
1	Project Manager: project design, coordination, travel, site work.	24 hours	per hour	
2	Project Manager: reporting	8 hours	per hour	
3	Senior Project Manager: review, consultation	4 hours	per hour	
4	Principal in Charge: review, consultation	3 hours	per hour	
5a	Sample Analysis: Ambient Air	12 samples	each	
5b	Sample Analysis: Ambient Air (additional samples, if required due to site conditions)	TBD	each	TBD
6	Sample Analysis: Surface Wipe	9 samples	each	
7	Disbursements (mileage, courier, communication)	1		
ESTIMATED TOTAL, taxes extra				\$7712

Limitations

The following limitations apply:

1. NWest requires safe access to compartments.
2. NWest requires access to electrical outlets to run air monitoring pumps.
3. NWest is not responsible for costs incurred due to delays in shipping, travel, or delivery of analytical results from laboratories. Additional costs are the responsibility of the client.
4. Mileage fees are waived.
5. Work is Monday to Friday between 8 am and 5 pm. Overtime excluded.
6. These types of testing may not be able to determine the source of asbestos contamination, but rather, will be able to determine whether contamination exists.

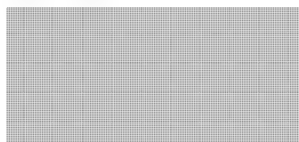
NOTE: Sampling pumps are noisy. NWest will coordinate with CCG to determine the least intrusive locations to sample in, while maintaining the integrity of the sampling plan.

NWest carries \$5 million Liability, \$5 million Pollution Liability and \$5 million Errors and Omissions Insurance.

Our WorkSafeBC number is 436736.

We hope this information is helpful to you and we look forward to working with you.

Yours truly,



Project Manager



North West
Environmental Group Ltd.



North West
Environmental Group Ltd.

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Date: January 30, 2018

Contractor: Canadian Coast Guard - Victoria

Client Job or PO#: NEED

Project: CCGS Bartlett Laundry Room Insp and Clearances

Project number: 34659

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34659-1a	Jan-30-2018	Jan-30-2018	(AC1) Sink	AC	JD	15.45	08:35	11:35	180	2.0	100	2781	2.55	<0.01	VV	<	
34659-2a	Jan-30-2018	Jan-30-2018	(AC2) Entrance	AC	JD	15.45	08:35	11:35	180	5.0	100	2781	6.37	<0.01	VV	<	
34659-3a	Jan-30-2018	Jan-30-2018	(QC) Process Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34659-4a	Jan-30-2018	Jan-30-2018	(QC) Batch Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

1/2

*** Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

WV - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibres/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



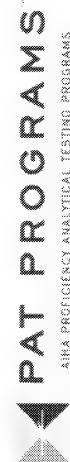
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSCB Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Prepared for: Canadian Coast Guard Services

2018

CCGS BARTLETT

**Limited Hazardous Materials
Risk Assessment and Safe Work Procedures:
2018 Dust Cleanup: Various Compartments**

Project: 34699 RA1 V1.0
Issue date: February 2, 2018



North West
Environmental Group Ltd.

201 – 415 Gorge Road East
Victoria, BC
V8T 2W1

CCGS BARTLETT Limited Hazardous Materials Risk Assessment & Safe Work Procedures February 2, 2018
2018 Dust Cleanup: Various Compartments **FOR REVIEW**

Contents

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1.2	Laundry Room.....	3
1.3	Void Space Under Wheelhouse.....	4
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2018 Dust Cleanup: Various Compartments **FOR REVIEW****1 Background and Scope of Work**

North West Environmental Group Ltd. (NWest) was retained by the Canadian Coast Guard (CCG, the Client) to conduct a limited hazardous materials assessment (LHMA) in accordance with WorkSafeBC regulatory requirements outlined in the BC Occupational Health and Safety (OHS) Regulation Section 20.112 – Hazardous Materials. The LHMA was conducted by NWest representative Jen Taptuna on January 26, 2018.

Various areas were found to have asbestos-containing cables. The presence of these cables triggered an assessment of latent dust in Wheelhouse console casings. Concurrently, damage to an asbestos-containing bulkhead panel was identified by CCG crew in the Laundry Room. An abatement contractor cleaned the Laundry Room in all accessible areas, excluding behind the washers and dryers due to inaccessibility at the time. As assessment of the dust in these two areas identified the presence of asbestos fibres in excess of expected ambient levels based on “experience standards” presented by the International Asbestos Testing Laboratories (IATL).

The scope of work was provided as follows in the request for quote with additional details provided to the attending technician at the time of this assessment.

Asbestos in latent dust in the Laundry room fell in the moderate range ($>10,000$ to $100,000$ structures per square centimetre (s/cm^2), warranting additional cleaning efforts behind the washers and dryers. Asbestos in latent dust in the Wheelhouse consoles fell in the high range ($>100,000$ s/cm^2). It is suspected that the asbestos is a result of pulling asbestos-containing cabling throughout the years.

Note that there is no accepted, standardized method of determining the mobility of asbestos fibres from latent dust into the air. The rate of mobility is dependent on various factors. The main factor for mobility on the vessel is vibration and movement during normal at-sea operations, therefore, it has been deemed prudent to remove all loosely adhered and safe to access dust from these areas.

Bulk sampling was undertaken of stored gasket materials in the Machinery Control Room Stores (MCR Stores). Chrysotile asbestos was identified in rope gasket/packing materials. These materials have been stored exposed in the MCR Stores for an unknown length of time.

The following document presents a risk assessment and provides safe work procedures for removing asbestos-containing dust from the following locations:

1. Wheelhouse and consoles.
2. Laundry Room, specifically behind the washers and dryers.
3. Void space beneath the Wheelhouse.
4. MCR console.
5. MCR stores.

Risk assessments and general procedures are based on our understanding of the scope of work and the methods and means intended to be used by the Abatement Contractor. Should the work activity type differ from what is noted herein, a new risk assessment may be required for that activity.

2018 Dust Cleanup: Various Compartments **FOR REVIEW**

1.1 Wheelhouse and Consoles

Scope of Work

- Remove loosely adhered dust from all surfaces within all consoles.
- Clean all surfaces in the Wheelhouse.
- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

1. *Moderate* risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at all Wheelhouse entrances. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- HEPA vacuum and bag curtains and other removable porous materials that will be reused. These items will be laundered prior to reuse.
- 6-mil poly drop sheet around console access to prevent entrainment of dust into the carpet.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within consoles. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum and wipe all surfaces within the Wheelhouse to remove loosely adhered latent dust. Binders/books: only HEPA vacuum the outer surfaces. CAUTION: take care not to change any settings on the control panels.
- HEPA vacuum the carpet using a carpet head attachment.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



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1.2 Laundry Room

Scope of Work

- Remove loosely adhered dust from all surfaces behind the washers and dryers.
- Clean all surfaces in the Laundry Room.
- *Hazards:* Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed.

Contractor Requirements

Remove loosely adhered dust from behind washers and dryers and clean all Laundry Room surfaces

2. Moderate risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the Laundry Room entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- A pop-up or small enclosure may be constructed in the Alleyway outside the Laundry Room to create more work space. If used, it must not impede worker access through the Alleyway. Coordinate with CCG crew.
- Dismount the washers and dryers to access the space behind them.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces on the back sides of the units and the bulkhead and deck behind. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- NWest will conduct an inspection at this time, prior to re-installation of the units.
- Upon successful inspection, reinstall units.
- HEPA vacuum exposed surfaces of the Laundry Room (i.e. do not open millwork to clean surfaces inside as these were cleaned previously).
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake a final inspection and air clearance sampling.



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Environmental Group Ltd.

2018 Dust Cleanup: Various Compartments **FOR REVIEW**

1.3 Void Space Under Wheelhouse

Scope of Work

- Remove loosely adhered dust from all surfaces.
- Remove all dust and debris from deck.

Hazards: Asbestos-containing dust. Vitreous fibres from exposed Fibreglass-type insulation. Red primer assumed to contain lead. Enclosed space with a single entrance/exit.

Contractor Requirements

Remove loosely adhered dust from all surfaces.

3. *Moderate* risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance to the void space. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Install a certified negative air unit (NAU) to draw air out of the space. Place it in such a manner as it does not impede regular or emergency access/egress of the space. The intent is to pull makeup air into all areas of the space, therefore, the extraction duct or NAU should be placed as far from the entrance as practicable to avoid short circuiting.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces in the space. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- Work should start from the entrance and move into the space to reduce the amount of contamination that accumulates on worker's coveralls.
- Note: additional effort may be required to remove all dust from high contact surfaces such as the deck (i.e. remove all dust, not just loosely adhered material).
- Due to the small volume of the work area and anticipated increased concentration of fibres rendered airborne during cleaning activities, workers must utilize **powered air purifying respirators (PAPRs)** equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



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Environmental Group Ltd.

1.4 MCR Console

Scope of Work

- Remove loosely adhered dust from all surfaces within the console.
- Remove loosely adhered dust from the deck behind the console and from cables running out of the console, up to the first cable tray bracket.
- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

4. *Moderate* risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- 6-mil poly drop sheet around console access.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within and behind console. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum the deck around console openings.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.5 MCR Stores

Scope of Work

- Remove box containing asbestos rope gaskets/packing. Remove any visually similar materials, after confirming with CCG these additional materials can be disposed.
- Clean the shelving unit and adjacent surfaces within three feet.



North West
Environmental Group Ltd.

FOR REVIEW

- *Hazards:* Asbestos-containing dust, bulkhead panels, and flooring products. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

5. *Moderate* risk cleanup activities

- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Remove identified bulk materials and place in 6 mil poly bags. Dispose as asbestos waste.
- Remove from the shelving unit each piece of equipment or material to be kept. HEPA vacuum all exterior surfaces and place in the MCR.
- When all items are removed from the shelving unit, HEPA vacuum and damp wipe the shelving unit.
- HEPA vacuum and damp wipe all surfaces behind and adjacent to the shelving unit.
- NWest will undertake an inspection for cleanliness at this time.
- Upon successful inspection, items can be replaced.
- HEPA vacuum the deck.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.6 Additional Requirements

- If suspect materials are discovered during abatement activities that have not been included in this risk assessment, work must stop and the material assessed by a qualified person.
- Submit Notice of Project complete with site specific work procedures to WorkSafeBC no less than 48 hours prior to commencing work
- All HEPA vacuums and NAUs must be certified (DOP/PAO tested) within 12 months of use. Recommend on-site certification to ensure units are functioning properly after transport.



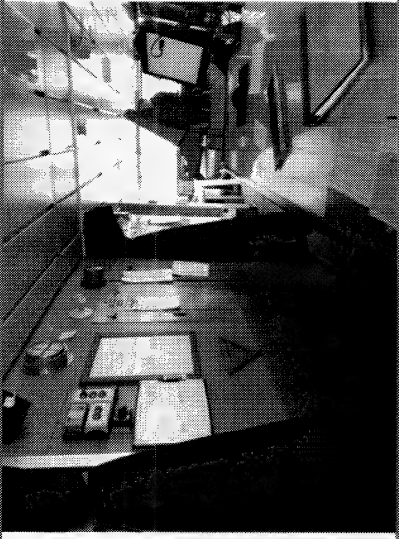


North West
Environmental Group Ltd.

2018 Dust Cleanup: Various Compartments


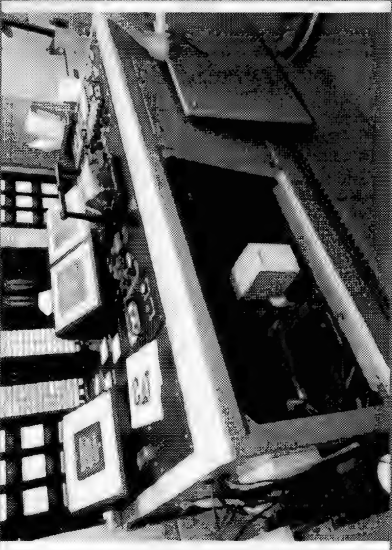
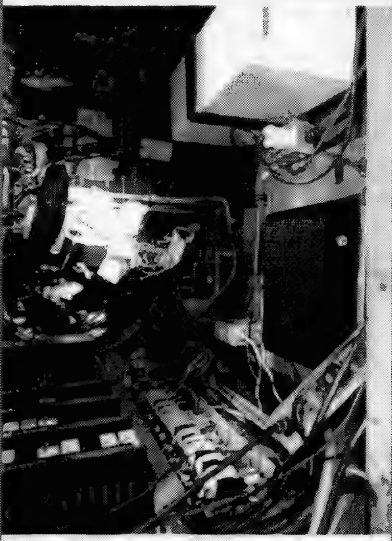
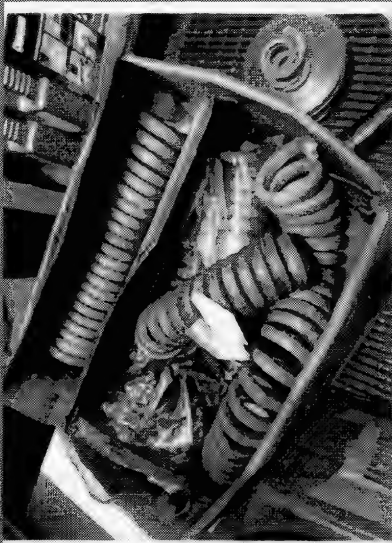
FOR REVIEW

- Provide occupational health and safety program including exposure control plans for asbestos, lead, vitreous fibres, and silica as well as procedures for de-energization and lockout if required.
- Provide all first aid for contractor workers.
- Other personal protective equipment (PPE) such as safety eyewear, hard hats, or face protection may be required. Site conditions may necessitate the use of alternative respirator cartridges (e.g. nearby welding, chemical applications, or vehicle exhaust). For the purposes of handling the above identified hazardous materials, all cartridges must utilize P-100 particulate filters, at minimum.
- No wet wiping, wire brushing, or application of liquids to electrical cabling.
- Contractor shall coordinate schedule around the crew's schedule including fueling events, maintenance, practice drills and any other reasonably foreseeable activity. Contractor is responsible for coordination with Chief Engineer and Chief Steward.
- All air sampling to be conducted by NWest.

2 Photo Plate

		
Unit/Location: Wheelhouse Description: Overview Comments: Curtains and other porous items meant for reuse will be HEPA vacuumed, bagged, and laundered. HEPA vacuum and wipe all surfaces.	Unit/Location: Wheelhouse console Description: Overview of typical console Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.	Unit/Location: Laundry Room Description: Overview Comments: Units are framed into place.

2018 Dust Cleanup: Various Compartments **FOR REVIEW**

		
<p>Unit/Location: Laundry Room</p> <p>Description: Dust behind washers and dryers to be cleaned.</p> <p>Comments: Remove units and clean backsides of units and the bulkhead and deck.</p>	<p>Unit/Location: Void Space Under Wheelhouse</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum and wipe to remove loosely adhered dust.</p>	<p>Unit/Location: Void Space Under Wheelhouse</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum and wipe to remove loosely adhered dust. Fibreglass-type insulation present.</p>
		
<p>Unit/Location: MCR</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.</p>	<p>Unit/Location: MCR</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.</p>	<p>Unit/Location: MCR Stores</p> <p>Description: Asbestos-containing rope gaskets/packing stored exposed.</p> <p>Comments: Dispose of ACM, clean shelving and adjacent surfaces within 2 feet.</p>



North West
Environmental Group Ltd.

CCGS BARTLETT Limited Hazardous Materials Risk Assessment & Safe Work Procedures February 2, 2018
2018 Dust Cleanup: Various Compartments FOR REVIEW

3 Validation

All work undertaken was conducted according to standardized methods and otherwise in accordance with protocols and procedures currently utilized by occupational hygiene professionals operating in this jurisdiction. No assessment was requested or made of other potential areas of asbestos or lead contamination that may or may not be present within the vessel.

Project Manager
Report author

Signature on file

Senior Project Manager
Qualified Person as per OHS Reg 6.1
Report review



CCGS BARTLETT
2018 Dust Cleanup: Various Compartments

Limited Hazardous Materials Risk Assessment & Safe Work Procedures
FOR REVIEW

February 2, 2018

Appendix A. Analytical Reports



North West
Environmental Group Ltd.



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6435034
Client No.: 34651-6b

Location: WH Fire Panel Console FWD
Area (cm²): 100
Density (s/mm²): 1260

Concentration (s/cm²): 6040000
Asbestos Type(s): Chrysotile Amosite Anthophyllite

Lab No.: 6435035
Client No.: 34651-7b

Location: WH Fire Panel Console AFT
Area (cm²): 100
Density (s/mm²): 1040

Concentration (s/cm²): 9990000
Asbestos Type(s): Chrysotile Amosite

Lab No.: 6435036
Client No.: 34651-8b

Location: WH FWD Stbd Console
Area (cm²): 100
Density (s/mm²): 76.9

Concentration (s/cm²): 370000
Asbestos Type(s): Chrysotile

Lab No.: 6435037
Client No.: 34651-9b

Location: WH Batch Blank
Area (cm²): Blank
Density (s/mm²): <7.69

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Lab No.: 6435038
Client No.: 34651-10b

Location: WH Process Blank
Area (cm²): Blank
Density (s/mm²): 7.69

Concentration (s/cm²): NA
Asbestos Type(s): Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 5:48:16

Page 1 of 3

000781



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console
Asbestos Testing
Project No.: 34651

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 1/31/2018 5:48:16

Page 2 of 3

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console
Asbestos Testing
Project No.: 34651

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435034
Client No.: 34651-6b
Volume Filtered (mL): 0.1
Dilution Factor (mL): 50
Grid Openings: 3
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0390
Sensitivity (s/mm²): 25.6
Detection Limit (s/cm²): 123000

Area Sampled (cm²): 100
Location: WH Fire Panel Console FWD
Asbestos Structures: 49
Structures < 5 Microns: 44
Structures ≥ 5 μm: 5
Structure Density (s/mm²): 1260
Structure Concentration (s/cm²): 6040000
Asbestos Type(s):
Chrysotile
Amosite
Anthophyllite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <25.6
Structure Concentration (s/cm²): <123000
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6435035
Client No.: 34651-7b

Volume Filtered (mL): 0.05
Dilution Factor (mL): 50
Grid Openings: 2
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0260
Sensitivity (s/mm²): 38.5
Detection Limit (s/cm²): 370000

Area Sampled (cm²): 100
Location: WH Fire Panel Console AFT
Asbestos Structures: 27
Structures < 5 Microns: 22
Structures ≥ 5 μm: 5
Structure Density (s/mm²): 1040
Structure Concentration (s/cm²): 9990000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <38.5
Structure Concentration (s/cm²): <370000
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated: 1/31/2018 5:48:16

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos
Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435036
Client No.: 34651-8b

Volume Filtered (mL): 0.1
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 92500

Area Sampled (cm²): 100
Location: WH FWD Stbd Console

Asbestos Structures: 4

Structures < 5 Microns: 2
Structures ≥ 5 µm: 2
Structure Density (s/mm²): 76.9
Structure Concentration (s/cm²): 370000
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <92500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6435037
Client No.: 34651-9b

Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Area Sampled (cm²): Blank
Location: WH Batch Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Dated : 1/31/2018 5:48:16

Page 2 of 4

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435038
Client No.: 34651-10b
Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Area Sampled (cm²): Blank
Location: WH Process Blank
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 5:48:16

Page 3 of 4

000786



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console
Asbestos Testing
Project No.: 34651

Sheppard, Frederick

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: February 25, 2018 6:20 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Subject: FW: Bartlett Air Results - Feb 3
Attachments: 34694 AA3 V1.0 2018-02-03 - CCGS Bartlett Background Testing S#1-35.pdf

FYI. Limit of detection (LOD) vs limit of quantitation (LOQ) is interesting, (and confusing).

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: February-04-18 7:08 AM
To: CCGS-NGCC, Bartlett Captain; McMillan Cody; Chaikin Gabriel
Subject: FW: Bartlett Air Results - Feb 3

Results from yesterday's air tests.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: [REDACTED]
Sent: February-03-18 10:51 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: Bartlett Air Results - Feb 3

Hi Matt, additional air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected as per my earlier email and have been analyzed. As before all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

We can chat more tomorrow.

Best,



Project Manager
North West Environmental Group Ltd.

C. [REDACTED]
P. 250-384-9695 ext. [REDACTED] F. 250-384-9865
201 - 415 Gorge Road East, Victoria BC, V8T 2W1

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No information has been removed or severed from this page



North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Background Testing

Date: February 03, 2018
Client Job or PO#: NEED
Project number: 34694

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34694-3a	Feb-02-2018	Feb-02-2018	(AMB) Control Room	AMB	JD	2.04	12:05	14:12	127	0.5	100	259.08	0.64	<0.01	W	<	
34694-4a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley Aft	AMB	JD	5.12	11:33	14:46	193	4.0	100	988.16	5.10	<0.01	W	<	
34694-5a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley FWD	AMB	JD	5.12	11:42	14:47	185	3.0	100	947.2	3.82	<0.01	W	<	
34694-6a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Oilers Aft Cabin	AMB	JD	2.04	11:22	14:01	159	2.0	100	324.36	2.55	<0.01	W	<	
34694-7a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Winchman's Cabin	AMB	JD	2.61	11:19	13:58	159	3.0	100	414.99	3.82	<0.01	W	<	
34694-8a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Alley	AMB	JD	5.1	11:07	16:44	337	2.5	100	1718.7	3.18	<0.01	W	<	
34694-9a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Logistic Officer's Cabin	AMB	JD	2.5	10:59	13:56	177	3.5	100	442.5	4.46	<0.01	W	<	
34694-10a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Lounge	AMB	JD	2.8	10:55	13:47	172	3.5	100	481.6	4.46	<0.01	W	<	
34694-11a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Alley	AMB	JD	5.12	11:54	16:58	304	1.5	100	1556.48	1.91	<0.01	W	<	
34694-12a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Chief Officer's Cabin	AMB	JD	2.36	11:47	14:19	152	5.5	100	358.72	7.01	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314
1/3

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/v	LOQ	Comment
34694-13a	Feb-02-2018	Feb-02-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34694-23a	Feb-02-2018	Feb-02-2018	(AC) Poop Deck Lounge	AC	JD	13.56	14:27	16:55	148	6.5	100	2006.88	8.28	<0.01	V	<	
34694-24a	Feb-03-2018	Feb-03-2018	(AMB) Boat Deck Chief Officer (Location 1)	AMB	JD	2.47	08:26	18:42	616	4.5	100	1521.52	5.73	<0.01	VV	<	
34694-25a	Feb-03-2018	Feb-03-2018	(AMB) Boat Deck Alley (Location 2)	AMB	JD	2.54	07:55	17:43	588	4.0	100	1493.52	5.10	<0.01	VV	<	
34694-26a	Feb-03-2018	Feb-03-2018	(AMB) Poop Deck Lounge (Location 3)	AMB	JD	2.54	07:50	17:40	590	4.5	100	1498.6	5.73	<0.01	VV	<	
34694-27a	Feb-03-2018	Feb-03-2018	(AMB) P. Deck Logistics Officer Cabin (Location 4)	AMB	JD	2.54	08:06	17:55	589	5.5	100	1496.06	7.01	<0.01	V	<	
34694-28a	Feb-03-2018	Feb-03-2018	(AMB) Poop Deck Alley (Location 5)	AMB	JD	2.54	07:57	17:45	588	7.5	100	1493.52	9.55	<0.01	V	<	
34694-29a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Winchman's Cabin (Location 6)	AMB	JD	2.54	08:16	18:00	584	6.0	100	1483.36	7.64	<0.01	V	<	
34694-30a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Oilers Aft Cabin (Location 7)	AMB	JD	2.54	08:12	17:51	579	15.0	100	1470.66	19.11	<0.01	V	<	
34694-31a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Alleyway Aft (Location 8)	AMB	JD	2.54	08:05	17:49	584	2.0	100	1483.36	2.55	<0.01	VV	<	
34694-32a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Alley FWD (Location 9)	AMB	JD	2.54	08:01	17:45	584	2.0	100	1483.36	2.55	<0.01	VV	<	
34694-33a	Feb-03-2018	Feb-03-2018	(AMB) Above Tank Top Control Room (Location 10)	AMB	JD	2.52	08:21	18:04	583	7.0	100	1469.16	8.92	<0.01	V	<	
34694-34a	Feb-03-2018	Feb-03-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34694-35a	Feb-03-2018	Feb-03-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

*** Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



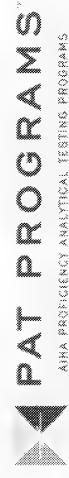
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

3/3

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: March-01-18 12:44 PM
To: CCGS-NGCC, Bartlett Logistics Officer
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: Re: Recent ACM IIR History
Attachments: Wheelhouse Console Dust Sampling.pdf; Wheelhouse Console ACM - Wiring Insulation.pdf; Laundry Room Bulkhead.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.5 01.03.2018.pdf

Importance: High

Cam,

Here's my list of recent ACM IIRs (Asbestos Containing Materials). I do not have any record of them being sent ashore.

1. Wheelhouse Console Dust Sampling 2018-01-12
2. Wheelhouse Console ACM – Wiring Insulation 2018-01-28
3. Laundry Room Bulkhead 2018-01-28
4. IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018. But please note that this was a WC IIR signed by Captain McCullagh, and that I have revised wording as document:.....
- 4b. IIR Eng.Room ACM Debris and Lead Paint Ver.5 09.01.2018 And Captain M.Shuckburgh may or may not need to or want to sign this depending on whether it has been submitted ashore.

Thanks,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsgncc.gc.ca
BartlettChief@gmail.com for files above 5 MB

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|--|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) <input type="text"/> | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett																									
Date of Report (YYYY-MM-DD) 2018-01-28	Mailing Address 25 Huron Street Victoria BC V8V 4V9																										
Name of Responsible Supervisor Matthew Jackson		Supervisor's Telephone # 250-882-1273																									
Organization (Select One)																											
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)																											
Regional Directorate (Select One)																											
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs																											
Program/Branch (Select One)																											
<table border="0"> <tr> <td><input type="checkbox"/> AtoN</td> <td><input type="checkbox"/> MarSup</td> <td><input checked="" type="checkbox"/> Refit and Maintenance</td> </tr> <tr> <td><input type="checkbox"/> Canso</td> <td><input type="checkbox"/> MCI</td> <td><input type="checkbox"/> ROC</td> </tr> <tr> <td><input type="checkbox"/> CGSS</td> <td><input type="checkbox"/> MCTS</td> <td><input type="checkbox"/> SAR</td> </tr> <tr> <td><input type="checkbox"/> E&I</td> <td><input type="checkbox"/> ME</td> <td><input type="checkbox"/> Science</td> </tr> <tr> <td><input type="checkbox"/> EFM (C&P)</td> <td><input type="checkbox"/> MNS</td> <td><input type="checkbox"/> Vessels of Concern</td> </tr> <tr> <td><input type="checkbox"/> ER</td> <td><input type="checkbox"/> MSET</td> <td><input type="checkbox"/> Other <input type="text"/></td> </tr> <tr> <td><input type="checkbox"/> Ice</td> <td><input type="checkbox"/> Ops Business</td> <td></td> </tr> <tr> <td><input type="checkbox"/> ILS</td> <td></td> <td></td> </tr> </table>				<input type="checkbox"/> AtoN	<input type="checkbox"/> MarSup	<input checked="" type="checkbox"/> Refit and Maintenance	<input type="checkbox"/> Canso	<input type="checkbox"/> MCI	<input type="checkbox"/> ROC	<input type="checkbox"/> CGSS	<input type="checkbox"/> MCTS	<input type="checkbox"/> SAR	<input type="checkbox"/> E&I	<input type="checkbox"/> ME	<input type="checkbox"/> Science	<input type="checkbox"/> EFM (C&P)	<input type="checkbox"/> MNS	<input type="checkbox"/> Vessels of Concern	<input type="checkbox"/> ER	<input type="checkbox"/> MSET	<input type="checkbox"/> Other <input type="text"/>	<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business		<input type="checkbox"/> ILS		
<input type="checkbox"/> AtoN	<input type="checkbox"/> MarSup	<input checked="" type="checkbox"/> Refit and Maintenance																									
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<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business																										
<input type="checkbox"/> ILS																											

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <input type="text"/>	Given Name <input type="text"/>	Initial(s) <input type="text"/>	Age <input type="text"/>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title <input type="text"/>	
Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor		Years of experience in current position <input type="text"/>	
<input type="checkbox"/> Other (Specify) <input type="text"/>			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Alongside Victoria Coast Guard Base Refit Period

Date of Incident (YYYY-MM-DD) 2018-01-24 Time of Incident (Local) 1600

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☐ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

January 22, 2018 - Electrical wire and insulation samples were taken from Wheelhouse Fire Detection Panel Console and Starboard Control Console to be tested for asbestos.

January 24, 2018 - Asbestos test results received, two of the seven samples wire samples returned positive for Chrysotile Asbestos (70%). The insulation tested positive while the wire wrap (jacket) tested negative. See attached pdf of test results. Recommendation from Northwest Environmental was to restrict access to location and consider any dust inside the console to be asbestos containing until samples were tested.

January 26, 2018 - Northwest Environmental returned to take dust samples from the two consoles. Discussing the wire insulation test results with the Project Manager from Northwest Environmental, the negative result of asbestos in the wire wrap is a good indication the dust may not contain asbestos, as chaffing wire wraps which contain asbestos due to vibration would be the greatest concern in the shedding asbestos fibers. Visual inspection of asbestos-containing wiring during dust sampling shows wire wrap in good overall condition. Samples couriered to a laboratory in New Jersey for analysis with a rush order (6-hour turnaround) requested on test results. Results expected January 30, 2018.

See attached photo of the wiring taken during dust sampling. Note the black wires not connected in the foreground and in the top wires in the bottom terminal strip are the wires which test result show contain asbestos insulation under the black wire wrap.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident? ☐ Yes ☐ No

Specify

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☐ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☐ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☐ Other action (Specify)

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Use of wiring containing asbestos insulation during vessel construction. The asbestos insulated wire makes up part of the wiring in this console, other wires are rubber insulated with a cloth wrap or PVC insulated. The wiring in the Bridge consoles was not identified in the Asbestos Management Plan.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress <input type="checkbox"/> Fatigue <input type="checkbox"/> Lack of knowledge and/or skill <input type="checkbox"/> Physical stress or capability <input type="checkbox"/> Rushing or inattention <input type="checkbox"/> Other (Specify) <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	<input type="checkbox"/> Abuse or misuse of equipment <input type="checkbox"/> Inadequate engineering or design <input type="checkbox"/> Inadequate hazard assessment <input type="checkbox"/> Inadequate personnel to complete task <input type="checkbox"/> Inadequate tools/equipment/materials <input type="checkbox"/> Inadequate training and/or familiarization <input type="checkbox"/> Inadequate work standard/procedure <input type="checkbox"/> Lack of enforcement of procedure or supervision <input type="checkbox"/> Standards/procedures not developed <input type="checkbox"/> Wear and tear <input checked="" type="checkbox"/> Other (Specify) <div style="border: 1px solid black; padding: 2px;">Incomplete identification and abatement of hazardous materials onboard</div>

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.
 Electrical insulation on wires installed outside of high heat location had been overlooked in previous Asbestos Management Surveys. Asbestos-containing wiring connects via terminal strips to rubber insulated cloth wrapped wires which are part of rubber jacketed bronze armored cables. Unable to investigate the consoles further until test results are received.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson C/E	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Steve Buss S/E	250-882-1273		

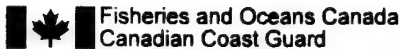
I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Currently awaiting test results of dust from consoles.
 Plan for abatement of dust and wiring to be determined based on results. Results expected January 30, 2018.
 Extensive work on the bridge consoles would be required if wiring is to be replaced.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Vessel Maintenance Manager	ASAP	



K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, ou=Coast Guard, ou=Coast Guard, email=BartlettCE@ccgs-ngcc.gc.ca, o=CA Date: 2018.01.27 10:52:32 -0800</small>
Title Chief Engineer	Date (YYYY-MM-DD)	2018-01-27
Email address	BartlettCE@ccgs-ngcc.gc.ca	

Investigators comments

Surprising positive test result for asbestos in an application that would not benefit from the once thought of advantages of using this mineral. Wire and wire wrap (jacket) look to be in good condition. Awaiting test results of the surrounding dust to make decision on course of action.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Chris Couch	250.213.3685	Chris Couch <small>Digitally signed by Chris Couch DN: cn=Chris Couch, ou=Canadian Coast Guard, ou=CCGS Bartlett, email=BartlettCHO@ccgs-ngcc.gc.ca, o=CA Date: 2018.01.28 10:04:58 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Chief Officer	BartlettCHO@ccgs-ngcc.gc.ca	2018-01-28

Workplace OHS Committee Member/Health and Safety Representative comments

During this patrol's OHS Meeting, we will review the Safety Manual - Asbestos Containing Materials (7.A.10) to remind everyone of asbestos containing materials (ACM). We will also review the ship's Asbestos Management Plan (AMP). Concur with this report, and nothing further to add.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, ou=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, o=CA Date: 2018.01.28 10:09:41 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-01-28

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Asbestos Management plan updated to reflect ACM in bridge consuls.
Concur with proposed Corrective & Preventative Measures.

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and



Fisheries and Oceans Canada
Canadian Coast Guard

the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|---|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett	
Date of Report (YYYY-MM-DD) 2018-02-12	Mailing Address 25 Huron Street, Victoria BC V8V 4V9		
Name of Responsible Supervisor Captain Mike McCullagh	Supervisor's Telephone # 250.213.3685		

Organization (Select One)

- ☐ National HQ ☐ Coast Guard College ☒ Region (if selected, choose Directorate and Program/Branch below)

Regional Directorate (Select One)

- ☐ AC's Office ☒ Fleet ☐ IBMS ☐ ITS ☐ Incident Management ☐ Navigational Programs

Program/Branch (Select One)

- | | | |
|------------------------------------|---|---|
| <input type="checkbox"/> AtoN | <input type="checkbox"/> MarSup | <input type="checkbox"/> Refit and Maintenance |
| <input type="checkbox"/> Canso | <input type="checkbox"/> MCI | <input type="checkbox"/> ROC |
| <input type="checkbox"/> CGSS | <input type="checkbox"/> MCTS | <input type="checkbox"/> SAR |
| <input type="checkbox"/> E&I | <input type="checkbox"/> ME | <input type="checkbox"/> Science |
| <input type="checkbox"/> EFM (C&P) | <input checked="" type="checkbox"/> MNS | <input type="checkbox"/> Vessels of Concern |
| <input type="checkbox"/> ER | <input type="checkbox"/> MSET | <input type="checkbox"/> Other |
| <input type="checkbox"/> Ice | <input type="checkbox"/> Ops Business | |
| <input type="checkbox"/> ILS | | |

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname 	Given Name 	Initial(s) 	Age
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title 	
Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor		Years of experience in current position 	
<input type="checkbox"/> Other (Specify) 			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Juan de Fuca Strait - WCVI Transiting North

Date of Incident (YYYY-MM-DD) 2018-01-31 Time of Incident (Local) 15:39

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Unknown dust identified as containing Asbestos

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

January 31, 2018 - 1539 Results received from dust samples taken during Wheelhouse Console ACM Wiring Insulation IIR. Test results from the consoles fell in the high range compared with expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (iATL). In consultation with the RD Fleet, the vessel turned around and returned to Victoria and was secured @ 2350. Additionally results from dust samples taken in the Laundry Room after the cracked ACM bulkhead IIR clean-up fell in the moderate range compared with "experience standards".

February 1, 2018 - 0800 Northwest Environmental Group Limited (NWE) and Canadian HAZ-MAT were contacted to attend the vessel to develop a sampling/testing and remediation plan. NWE provided third party oversight of the remediation work and performed the visual and air clearance inspection and documentation. Bulk samples taken from wiring in MCR console due to similar morphology wiring which tested positive in the Wheelhouse. Sample results returned positive for 30% Chrysotile asbestos. Roll of packing in MCR STBD stores tested positive for 30% Chrysotile asbestos.

February 2, 2018 - 1000 NWE on-board to implement Background Asbestos Testing. Background testing was conducted to look for evidence of the spread of asbestos contamination. The test consists of surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether the fibres have been rendered airborne. 1630 the first set of results for the low volume air sampling were received and verbally conveyed by NWE, the results were below the level of detection 0.01f/ml. 1900 sample results conveyed by NWE from the longer running high volume pumps were also below the level of detection 0.01f/ml. NWE developed the Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments. Compartments or spaces included: Wheelhouse including consoles, Void Space below Wheelhouse due to open wire transits to Wheelhouse consoles, Laundry Room, MCR Console and MCR Stbd Stores.

February 3, 2018 - NWE returned to perform long duration (10 hours) sampling in the same locations. The sample volume must be greater than 1425 liters to qualify the results to a prove the air meets the Air Clearance/Permissible Exposure Limit for continuous occupation of 0.01f/ml. Results received and some samples were above the limit of detection but below the limit of quantitation. NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are below WorksafeBC exposure limits"

Dust samples to couriered by NWE to iATL February 5, 2018 with quick turn around time of samples of 6 hours ordered. Hold up clearing customs at the border required re-sampling on Feb 8, 2018.

February 4, 2018 - Canadian Haz-mat began work cleaning Wheelhouse consoles with oversight provided by NWE.

February 5, 2018 - Canadian Haz-mat finished work in the Wheelhouse and started and finished work in the Laundry Room. Both spaces passed visual inspection by NWE.

February 6, 2018 - Canadian Haz-mat on-board removing thermocouple extension wire from ER and MCR console. MCR console cleaning started and completed. All unidentifiable packing disposed of through Canadian Hazmat. Stbd MCR cleaning started and completed. NWE air clearance samples from Wheelhouse and Laundry Room passed.

February 7, 2018 - Canadian Haz-mat on-board setup and performing cleaning in Bridge Void Space. Stbd MCR, ER, and MCR passed visuals inspection by NWE. NWE air clearance sampling from MCR and Stbd MCR taken and passed.

February 8, 2018 - Canadian Haz-mat onboard completed cleaning in Bridge Void Space. Space passed visual inspection by NWE. NWE air clearance sample from Bridge Void Space passed. Dust wipe samples retook in ER, MCR, and HVAC as the initial samples were still held up at customs.

February 9, 2018 - NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE: "We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits."

Dust sample results received: HVAC return and 3 of 4 samples from ER returned low or none detected. MCR console sample returned "moderate", this was directly below the ACM wire removals. The area was wet wiped after the sample taken. MCR passed air and visual clearance by NWE. As per NWE recommendation, console top was HEPA vacuumed. One sample taken from ER in an inaccessible place returned "elevated". Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: " Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer." Follow up sampling to be conducted upon return to Victoria. Defect entered.

Reports attached:

- iATL dust wipe samples results
- NWE air sample test results alongside
- NWE Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments
- NWE Asbestos Air and Visual Clearance Documents for effected spaces
- NWE air sample test results while underway at sea conditions

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☒ Yes ☐ No

Specify

A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire insulation on the bridge. Restricting access and sampling the dust was the course of action upon receiving the wire insulation results. Void space, MCR console, MCR Stbd Stores and Laundry Room access was restricted upon receiving the results on asbestos-containing materials found.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?

☐ Yes ☒ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions	Substandard Conditions
<input type="checkbox"/> Bypassing safety devices	<input type="checkbox"/> Congested or restricted area
<input type="checkbox"/> Failure to check or monitor	<input type="checkbox"/> Defective tools, equipment or materials
<input type="checkbox"/> Failure to communicate/coordinate	<input type="checkbox"/> Excessive noise
<input type="checkbox"/> Failure to follow procedure/policy	<input type="checkbox"/> Heat/cold exposure
<input checked="" type="checkbox"/> Failure to identify hazard/risk	<input type="checkbox"/> Inadequate/improper PPE or use of PPE
<input type="checkbox"/> Failure to react/correct	<input type="checkbox"/> Inadequate communication
<input type="checkbox"/> Failure to service equipment properly	<input type="checkbox"/> Inadequate guards or barriers
<input type="checkbox"/> Failure to use PPE	<input type="checkbox"/> Inadequate information/data
<input type="checkbox"/> Failure to warn or secure	<input type="checkbox"/> Inadequate instruction/procedure
<input type="checkbox"/> Horseplay	<input type="checkbox"/> Inadequate preparation/planning
<input type="checkbox"/> Improper lifting	<input type="checkbox"/> Inadequate support/assistance
<input type="checkbox"/> Improper loading, placing, mixing	<input type="checkbox"/> Inadequate ventilation
<input type="checkbox"/> Improper position/posture for task	<input type="checkbox"/> Inadequate warning system
<input type="checkbox"/> Operating at improper speed	<input type="checkbox"/> Lack of tools, equipment or materials
<input type="checkbox"/> Using defective equipment	<input type="checkbox"/> Poor housekeeping
<input type="checkbox"/> Using equipment improperly	<input checked="" type="checkbox"/> Presence of harmful materials
<input type="checkbox"/> Other action (Specify)	<input type="checkbox"/> Radiation exposure
	<input type="checkbox"/> Uneven ground/terrain
	<input type="checkbox"/> Weather or environmental conditions
	<input type="checkbox"/> Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Dust inside wheelhouse consoles contains asbestos. Additional wires of the same morphology as the ACM wires on the bridge found in the MCR console. NWE suspects the source of the dust is from pulling asbestos containing cabling throughout the years.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress	<input type="checkbox"/> Abuse or misuse of equipment
<input type="checkbox"/> Fatigue	<input type="checkbox"/> Inadequate engineering or design
<input type="checkbox"/> Lack of knowledge and/or skill	<input checked="" type="checkbox"/> Inadequate hazard assessment
<input type="checkbox"/> Physical stress or capability	<input type="checkbox"/> Inadequate personnel to complete task
<input type="checkbox"/> Rushing or inattention	<input type="checkbox"/> Inadequate tools/equipment/materials
<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Inadequate training and/or familiarization
	<input type="checkbox"/> Inadequate work standard/procedure
	<input type="checkbox"/> Lack of enforcement of procedure or supervision
	<input type="checkbox"/> Standards/procedures not developed
	<input type="checkbox"/> Wear and tear
	<input type="checkbox"/> Other (Specify)

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

Incomplete identification and abatement of asbestos on-board. Depth and scope of previous Asbestos Surveys did not identify the wiring in these consoles.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson CE	250-882-1273	Steve Buss SE	250-213-3685
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Mike McCullagh CO	250-882-3864		

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Future Asbestos Management Surveys to include on-board air sampling and dust wipe samples.
As per NWE recommendation future work inside Wheelhouse and MCR consoles and Wheelhouse Void to be considered asbestos work due difficulty of removing all the dust for the wiring, terminal strips, circuit boards/components, cloth wrap on wiring and bronze braid on the electrical cables.
Work outside of normally accessed spaces/equipment may encounter the possibility of asbestos debris and be considered in the risk assessment prior to starting work.
Vessel Specific Asbestos Management plan and labels updated to cover findings during the investigation.
Upon return to Victoria additional dust sampling to be conducted in the ER/AMS as per NWE recommendations.
Training arranged for 5 crew members for Asbestos Awareness and Abatement on February 22/23.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Marine Engineering		

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, o=Coast Guard, ou=Coast Guard, email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.13 08:37:47 -0800</small>
Title	Date (YYYY-MM-DD)	
Chief Engineer	13/2/2017	
Email address	BartlettCE@ccgs-ngcc.gc.ca	

Investigators comments

Depending on the anticipated service life of the Bartlett, consideration should be given for a thorough abatement plan to be developed.
Future Asbestos Management Surveys to include regular air and dust sampling.
Bulk sampling frequency and scope to be increased to further identify/clear areas on-board of ACM.
At sea air sampling plan was developed with NWE, and performed to ensure air quality while at sea prior to returning the vessel to operational status.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Steve Buss	250-213-3685	Steve Buss <small>Digitally signed by Steve Buss DN: cn=Steve Buss, o=Canadian Coast Guard, ou=CCG, email=BartlettSE@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.13 08:45:05 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-02-13

Workplace OHS Committee Member/Health and Safety Representative comments

Investigation performed to complete satisfaction of the Workplace OHS Committee Member. A well thought out plan has been developed for future testing to ensure the health and safety of all crew members in the future.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@bar-ngcc.gc.ca, c=CA Date: 2018.02.13 08:15:53 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-02-13

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with corrective and preventative measures adopted, and the heightened awareness and vigilance with regard to ACM containing work spaces.

Privacy Notice

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the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at:
DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|---|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) | |

B. General Information (Required)

Employer's (Department) Name Coast Guard Fleet		Site/Vessel Name (and official number) CCGS Bartlett	
Date of Report (YYYY-MM-DD) 2018-01-28	Mailing Address 25 Huron Street, Victoria, BC, V8V 4V9		
Name of Responsible Supervisor M. McCullagh		Supervisor's Telephone # 250-882-3864	

Organization (Select One)

- ☐ National HQ ☐ Coast Guard College ☒ Region (if selected, choose Directorate and Program/Branch below)

Regional Directorate (Select One)

- ☐ AC's Office ☒ Fleet ☐ IBMS ☐ ITS ☐ Incident Management ☐ Navigational Programs

Program/Branch (Select One)

- | | | |
|------------------------------------|---|---|
| <input type="checkbox"/> AtoN | <input type="checkbox"/> MarSup | <input type="checkbox"/> Refit and Maintenance |
| <input type="checkbox"/> Canso | <input type="checkbox"/> MCI | <input type="checkbox"/> ROC |
| <input type="checkbox"/> CGSS | <input type="checkbox"/> MCTS | <input type="checkbox"/> SAR |
| <input type="checkbox"/> E&I | <input type="checkbox"/> ME | <input type="checkbox"/> Science |
| <input type="checkbox"/> EFM (C&P) | <input checked="" type="checkbox"/> MNS | <input type="checkbox"/> Vessels of Concern |
| <input type="checkbox"/> ER | <input type="checkbox"/> MSET | <input type="checkbox"/> Other |
| <input type="checkbox"/> Ice | <input type="checkbox"/> Ops Business | |
| <input type="checkbox"/> ILS | | |

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname 		Given Name 		Initial(s) 	Age
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title 		Years of experience in current position 	
Employment Status					
<input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor					
<input type="checkbox"/> Other (Specify) 					

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Victoria Coast Guard Base

Date of Incident (YYYY-MM-DD) 2018-01-27 Time of Incident (Local) 1345

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Cracked seam in asbestos bulkhead

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of damage to panels.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident? ☐ Yes ☐ No

Specify

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☐ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☐ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☐ Other action (Specify)

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☒ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Suspected cause or contributing factor:

CCGS Bartlett was securing at Victoria Coast Guard Base. Wind was E'ly 29 knots, on Bartlett's port quarter, resulting in the setting of the starboard stern towards the jetty. Upon arrival the starboard stern quarter in way of the laundry room porthole tube touched a piling that is standing proud of the jetty face. This touching event may have cracked the interior asbestos bulkhead lining panel and joining seams.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors

- ☐ Emotional stress
- ☐ Fatigue
- ☐ Lack of knowledge and/or skill
- ☐ Physical stress or capability
- ☐ Rushing or inattention
- ☐ Other (Specify)

Job Factors

- ☐ Abuse or misuse of equipment
- ☐ Inadequate engineering or design
- ☐ Inadequate hazard assessment
- ☐ Inadequate personnel to complete task
- ☐ Inadequate tools/equipment/materials
- ☐ Inadequate training and/or familiarization
- ☐ Inadequate work standard/procedure
- ☐ Lack of enforcement of procedure or supervision
- ☐ Standards/procedures not developed
- ☐ Wear and tear
- ☒ Other (Specify)

Ship characteristics combined with weather.

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

See attached excerpt from "CCGS Bartlett Maneuverability Discussion"

- Large sail area aft resulting in an "unbalanced" design affected by minimal cross-winds.
- The impact of having a significant sail area fully aft in conditions other than the wind directly ahead results in the transfer of the pivot point of the vessel forward thus producing a larger than expected lever effect.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Mike McCullagh CO	250-882-3864	Christopher Couch Ch/O	250-413-2800
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Matthew Jackson CE	250-882-1273	Joseph Van Der Sande 3rd/O	250-413-2800

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
Abatement contractor clean up of possibly asbestos containing debris. Encapsulation of exposed asbestos in bulkhead lining panels.	1,500\$

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Asbestos: Space secured against entry and signs posted. Abatement contractor to be contacted (on the next business day) to clean up debris and encapsulate the exposed asbestos.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer / Marine Engineering	2018-01-30	

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, o=Coast Guard, ou=Coast Guard, email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 15:48:15 -0800</small>

Title	Chief Engineer	Date (YYYY-MM-DD)	2018-01-28
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Email address	BartlettCE@ccgs-ngcc.gc.ca
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Investigators comments

Quick action was taken to restrict access to a possibly contaminated space after discovery of the damaged bulkhead lining panels. Plan for clean up and encapsulation in place.



L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Chris Couch	250.423.2800	Chris Couch <small>Digitally signed by Chris Couch DN: cn=Chris Couch, o=Canadian Coast Guard, ou=CCGS Bartlett, email=BartlettCHO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 15:51:00 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Chief Officer	BartlettCHO@ccgs-ngcc.gc.ca	2018-01-28

Workplace OHS Committee Member/Health and Safety Representative comments

I confirm that the laundry room has been secured to prevent entry by crew members.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 17:25:22 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-01-28

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

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DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|--|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) <input type="text"/> | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett																									
Date of Report (YYYY-MM-DD) <input type="text"/>	Mailing Address 25 Huron Street, Victoria, BC, V8V 4V9																										
Name of Responsible Supervisor Ross McKenzie		Supervisor's Telephone # 250-882-1273																									
Organization (Select One)																											
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)																											
Regional Directorate (Select One)																											
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs																											
Program/Branch (Select One)																											
<table border="0"> <tr> <td><input type="checkbox"/> AtoN</td> <td><input type="checkbox"/> MarSup</td> <td><input checked="" type="checkbox"/> Refit and Maintenance</td> </tr> <tr> <td><input type="checkbox"/> Canso</td> <td><input type="checkbox"/> MCI</td> <td><input type="checkbox"/> ROC</td> </tr> <tr> <td><input type="checkbox"/> CGSS</td> <td><input type="checkbox"/> MCTS</td> <td><input type="checkbox"/> SAR</td> </tr> <tr> <td><input type="checkbox"/> E&I</td> <td><input type="checkbox"/> ME</td> <td><input type="checkbox"/> Science</td> </tr> <tr> <td><input type="checkbox"/> EFM (C&P)</td> <td><input type="checkbox"/> MNS</td> <td><input type="checkbox"/> Vessels of Concern</td> </tr> <tr> <td><input type="checkbox"/> ER</td> <td><input type="checkbox"/> MSET</td> <td><input type="checkbox"/> Other <input type="text"/></td> </tr> <tr> <td><input type="checkbox"/> Ice</td> <td><input type="checkbox"/> Ops Business</td> <td></td> </tr> <tr> <td><input type="checkbox"/> ILS</td> <td></td> <td></td> </tr> </table>				<input type="checkbox"/> AtoN	<input type="checkbox"/> MarSup	<input checked="" type="checkbox"/> Refit and Maintenance	<input type="checkbox"/> Canso	<input type="checkbox"/> MCI	<input type="checkbox"/> ROC	<input type="checkbox"/> CGSS	<input type="checkbox"/> MCTS	<input type="checkbox"/> SAR	<input type="checkbox"/> E&I	<input type="checkbox"/> ME	<input type="checkbox"/> Science	<input type="checkbox"/> EFM (C&P)	<input type="checkbox"/> MNS	<input type="checkbox"/> Vessels of Concern	<input type="checkbox"/> ER	<input type="checkbox"/> MSET	<input type="checkbox"/> Other <input type="text"/>	<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business		<input type="checkbox"/> ILS		
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<input type="checkbox"/> EFM (C&P)	<input type="checkbox"/> MNS	<input type="checkbox"/> Vessels of Concern																									
<input type="checkbox"/> ER	<input type="checkbox"/> MSET	<input type="checkbox"/> Other <input type="text"/>																									
<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business																										
<input type="checkbox"/> ILS																											

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <input type="text"/>	Given Name <input type="text"/>	Initial(s) <input type="text"/>	Age <input type="text"/>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title <input type="text"/>	
Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor		Years of experience in current position <input type="text"/>	
<input type="checkbox"/> Other (Specify) <input type="text"/>			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Engine Room, CCGS Bartlett, Victoria Coast Guard Base, Victoria harbour

Date of Incident (YYYY-MM-DD) 2018.01.08

Time of Incident (Local)

0950 hours

Body part injured (if applicable)

<input type="checkbox"/> Abdomen	<input type="checkbox"/> Back	<input type="checkbox"/> Eye	<input type="checkbox"/> Neck	<input type="checkbox"/> Knee	<input type="checkbox"/> Pelvis / Groin
<input type="checkbox"/> Arm	<input type="checkbox"/> Body System / Internal	<input type="checkbox"/> Foot	<input type="checkbox"/> Head	<input type="checkbox"/> Leg	<input type="checkbox"/> Shoulder
<input type="checkbox"/> Auditory	<input type="checkbox"/> Chest	<input type="checkbox"/> Hand	<input type="checkbox"/> Hip	<input type="checkbox"/> Multiple injuries	<input type="checkbox"/> Unknown

Nature of injury (if known)

<input type="checkbox"/> Burns	<input type="checkbox"/> Multiple Injuries
<input type="checkbox"/> Fractures	<input type="checkbox"/> Traumatic joint/ligament and muscle/tendon injury
<input type="checkbox"/> Injury to Nerves and Spinal Cord	<input type="checkbox"/> Wounds, Lacerations and Amputations
<input type="checkbox"/> Intracranial Injury	<input type="checkbox"/> Unknown

E. Investigation Information (Required)

Type of Event

<input type="checkbox"/> Caught in or between	<input type="checkbox"/> Exposure to a traumatic event	<input type="checkbox"/> Slips, trips and falls
<input type="checkbox"/> Contact with harmful substance	<input type="checkbox"/> Mechanical/Equipment Failure	<input type="checkbox"/> Struck by or against
<input type="checkbox"/> Exposure to Electricity	<input type="checkbox"/> Mechanism of harm unknown	<input type="checkbox"/> Vehicle incident
<input type="checkbox"/> Exposure to Fire	<input type="checkbox"/> Overexertion	<input checked="" type="checkbox"/> Other (specify)
<input type="checkbox"/> Exposure to heat/cold	<input type="checkbox"/> Repetitive Motion	
<input type="checkbox"/> Exposure to noise		Hazardous material spill

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

The Bartlett was informed by our Asbestos consultant of a hazardous condition following a "routine" pre-work Hazardous Material Assessment prior to replacing the bulkhead insulation behind the Engineroom Dirty Oil Tank. We were advised to stay clear of and not disturb the pile of debris containing asbestos (old gasket material), and the lead paint used on the base below the tank, and to isolate that area of the engineroom - and to have suitable qualified professionals remove the hazards as ASAP. Contractor removed the ACM & Lead Paint hazards 2 days later, in preparation for the reinsulating the bulkheads.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident? ☒ Yes ☐ No

Specify

The hazardous material consultant taking the various hazardous materials samples was fully aware of the potential risks.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☒ No

Specify

N/A

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☐ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☒ Other action (Specify)

None on this occasion, but implies that there was possibly a failure to identify hazard at a previous time.

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

This is really a non-incident because the pre-work Hazardous Materials Assessment identified the hazards before the work was performed. However, prior to receiving the positive test results (for ACM & lead paint), it could be said that there was a "Failure to identify hazard/risk".

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors

- ☐ Emotional stress
- ☐ Fatigue
- ☐ Lack of knowledge and/or skill
- ☐ Physical stress or capability
- ☐ Rushing or inattention
- ☒ Other (Specify)

This really was a non-incident, because the hazards were identified before work commenced in that area.

Job Factors

- ☐ Abuse or misuse of equipment
- ☐ Inadequate engineering or design
- ☐ Inadequate hazard assessment
- ☐ Inadequate personnel to complete task
- ☐ Inadequate tools/equipment/materials
- ☐ Inadequate training and/or familiarization
- ☐ Inadequate work standard/procedure
- ☐ Lack of enforcement of procedure or supervision
- ☐ Standards/procedures not developed
- ☐ Wear and tear
- ☒ Other (Specify)

This really was a non-incident, because the hazards were identified before work commenced in that area.

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

The "incident" per se, was the identification of several hazards, and the leading cause was prudence & foresight.

If the existence of the the hazardous materials debris is construed as an incident in itself, I think that would prove fruitless, considering that the history of the ACM debris is unknown and it was nevertheless dealt with correctly.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Ross McKenzie	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
N/A	0

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Corrective action to prevent recurrence of hazardous materials identification?

To prevent the existence of hazardous materials would be to identify them all , and remove them all, but moreover, and perhaps the only useful information to be gained from this IIR is to potentially alert crews that ACM & lead paint are potential hazards to be encountered on the ship.

The debris & the lead paint were found below a Waste Oil Tank that had possibly never been removed since it was installed 49 years ago.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Ross McKenzie	2018-01-11	2018-01-11

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Ross McKenzie	250-882-1273	Ross McKenzie <small>Digitally signed by Ross McKenzie DN: cn=Ross McKenzie, o=Canadian Coast Guard, ou=CCGS Bartlett email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.20 10:40:05 -0800</small>

Title	Date (YYYY-MM-DD)
Chief Engineer	2018-01-20

Email address
BartlettCE@ccgs-ngcc.gc.ca

Investigators comments

The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.



L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Ryan Moore	250-882-1273	Ryan N. Moore <small>Digitally signed by Ryan N. Moore DN: cn=Ryan N. Moore, o=Canadian Coast Guard, ou=DFO, email=Ryan.Moore@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.20 16:54:56 -0600</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-01-20

Workplace OHS Committee Member/Health and Safety Representative comments

Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.02 10:15:27 -0600</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-02-02

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with intent of IRR

Privacy Notice

The personal information provided on this form is collected under the authority of the [Financial Administration Act](#), the [Public Service Labour Relations Act](#) and the [Canada Labour Code](#) for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in [Information about programs and information holdings: Occupational Health and Safety PSE 907](#) and [Vehicle, Ship, Boat and Aircraft Accidents PSE 908](#).

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the [Privacy Act](#) and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|---|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett	
Date of Report (YYYY-MM-DD) 	Mailing Address 25 Huron Street, Victoria, BC, V8V 4V9		
Name of Responsible Supervisor Ross McKenzie		Supervisor's Telephone # 250-882-1273	

Organization (Select One)

- ☐ National HQ
 ☐ Coast Guard College
 ☒ Region (if selected, choose Directorate and Program/Branch below)

Regional Directorate (Select One)

- ☐ AC's Office
 ☒ Fleet
 ☐ IBMS
 ☐ ITS
 ☐ Incident Management
 ☐ Navigational Programs

Program/Branch (Select One)

- | | | |
|------------------------------------|---------------------------------------|---|
| <input type="checkbox"/> AtoN | <input type="checkbox"/> MarSup | <input checked="" type="checkbox"/> Refit and Maintenance |
| <input type="checkbox"/> Canso | <input type="checkbox"/> MCI | <input type="checkbox"/> ROC |
| <input type="checkbox"/> CGSS | <input type="checkbox"/> MCTS | <input type="checkbox"/> SAR |
| <input type="checkbox"/> E&I | <input type="checkbox"/> ME | <input type="checkbox"/> Science |
| <input type="checkbox"/> EFM (C&P) | <input type="checkbox"/> MNS | <input type="checkbox"/> Vessels of Concern |
| <input type="checkbox"/> ER | <input type="checkbox"/> MSET | <input type="checkbox"/> Other |
| <input type="checkbox"/> Ice | <input type="checkbox"/> Ops Business | |
| <input type="checkbox"/> ILS | | |

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname 	Given Name 	Initial(s) 	Age
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title 	
Years of experience in current position 			
Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor			
<input type="checkbox"/> Other (Specify) 			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Engine Room, CCGS Bartlett, Victoria Coast Guard Base, Victoria harbour

Date of Incident (YYYY-MM-DD) 2018.01.08

Time of Incident (Local)

0950 hours

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise Hazardous material spill

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

The Bartlett was informed by our Asbestos consultant of a hazardous condition following a "routine" pre-work Hazardous Material Assessment prior to replacing the bulkhead insulation behind the Engineroom Dirty Oil Tank. We were advised to stay clear of and not disturb the pile of debris containing asbestos (old gasket material), and the lead paint used on the base below the tank, and to isolate that area of the engineroom - and to have suitable qualified professionals remove the hazards as ASAP. Contractor removed the ACM & Lead Paint hazards 2 days later, in preparation for the reinsulating the bulkheads.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident? ☒ Yes ☐ No

Specify

The hazardous material consultant (NWE) taking the various hazardous materials samples was fully aware of the potential risks.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☒ No

Specify

N/A

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☐ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☒ Other action (Specify)

None on this occasion, but implies that there was possibly a failure to identify hazard at a previous time.

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

This is really a non-incident because the pre-work Hazardous Materials Assessment identified the hazards before the work was performed. However, prior to receiving the positive test results (for ACM & lead paint), it could be said that there was a "Failure to identify hazard/risk".

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors

- ☐ Emotional stress
- ☐ Fatigue
- ☐ Lack of knowledge and/or skill
- ☐ Physical stress or capability
- ☐ Rushing or inattention
- ☒ Other (Specify)

This "incident" was merely the discovery of 2 hazardous materials in a routine Hazardous Materials Assessment where we had not expected to find any.

Job Factors

- ☐ Abuse or misuse of equipment
- ☐ Inadequate engineering or design
- ☐ Inadequate hazard assessment
- ☐ Inadequate personnel to complete task
- ☐ Inadequate tools/equipment/materials
- ☐ Inadequate training and/or familiarization
- ☐ Inadequate work standard/procedure
- ☐ Lack of enforcement of procedure or supervision
- ☐ Standards/procedures not developed
- ☐ Wear and tear
- ☒ Other (Specify)

A Routine Risk Assessment revealed the presence of previously unknown hazardous materials in the area where the contractors were scheduled to work.

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

The "incident" per se, was the identification of several hazardous materials (ACM gasket remnants & lead paint). The existence of the the hazardous materials debris (in an areas where we had not expected to encounter the hazardous materials) is the incident in itself. The materials were discovered in a pre-work assessment, and this is the first incident of asbestos gasket material discovery, and the identification of the lead paint hazard.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Ross McKenzie	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
N/A	0

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Identifying the hazardous materials prior to commencing a job that involves the presence of hazardous materials (such as ACM & lead paint) is the next best thing to identifying them all, and remove them, and moreover, and perhaps the most useful information to be gained from this IIR is to alert crews that ACM gaskets & lead paint are potential hazards to be encountered on the ship.

The debris & the lead paint were found below a Waste Oil Tank that had possibly never been removed since it was installed 49 years ago.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Ross McKenzie	2018-01-11	2018-01-11

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Ross McKenzie	250-882-1273	Ross McKenzie

Digitally signed by Ross McKenzie
DN: cn=Ross McKenzie, o=Canadian Coast Guard, ou=CCGS Bartlett,
email=bartlettce@ccgs-ngcc.gc.ca, c=CA
Date: 2018.01.20 10:45:05 -0800

Title	Chief Engineer	Date (YYYY-MM-DD)	2018-01-20
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Email address	BartlettCE@ccgs-ngcc.gc.ca
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Investigators comments

The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.



L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Ryan Moore	250-882-1273	Ryan N. Moore <small>Digitally signed by Ryan N. Moore DN: cn=Ryan N. Moore, o=Canadian Coast Guard, ou=DFO, email=Ryan.Moore@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.20 15:54:56 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-01-20

Workplace OHS Committee Member/Health and Safety Representative comments

Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.02 10:15:27 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-02-02

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with intent of IRR

Privacy Notice

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: March 1, 2018 12:44 PM
To: CCGS-NGCC, Bartlett Logistics Officer
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: Re: Recent ACM IIR History
Attachments: Wheelhouse Console Dust Sampling.pdf; Wheelhouse Console ACM - Wiring Insulation.pdf; Laundry Room Bulkhead.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.5 01.03.2018.pdf

Importance: High

Cam,

Here's my list of recent ACM IIRs (Asbestos Containing Materials). I do not have any record of them being sent ashore.

1. Wheelhouse Console Dust Sampling 2018-01-12
2. Wheelhouse Console ACM – Wiring Insulation 2018-01-28
3. Laundry Room Bulkhead 2018-01-28
4. IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018. But please note that this was a WC IIR signed by Captain McCullagh, and that I have revised wording as document:.....
- 4b. IIR Eng.Room ACM Debris and Lead Paint Ver.5 09.01.2018 And Captain M.Shuckburgh may or may not need to or want to sign this depending on whether it has been submitted ashore.

Thanks,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|---|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) | |

B. General Information (Required)

Employer's (Department) Name <div style="border: 1px solid black; padding: 2px;">Canadian Coast Guard</div>		Site/Vessel Name (and official number) <div style="border: 1px solid black; padding: 2px;">CCGS Bartlett</div>	
Date of Report (YYYY-MM-DD) <div style="border: 1px solid black; padding: 2px;">2018-02-12</div>	Mailing Address <div style="border: 1px solid black; padding: 2px;">25 Huron Street, Victoria BC V8V 4V9</div>		
Name of Responsible Supervisor <div style="border: 1px solid black; padding: 2px;">Captain Mike McCullagh</div>		Supervisor's Telephone # <div style="border: 1px solid black; padding: 2px;">250.213.3685</div>	
Organization (Select One)			
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)			
Regional Directorate (Select One)			
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs			
Program/Branch (Select One)			
<input type="checkbox"/> AtoN <input type="checkbox"/> Canso <input type="checkbox"/> CGSS <input type="checkbox"/> E&I <input type="checkbox"/> EFM (C&P) <input type="checkbox"/> ER <input type="checkbox"/> Ice <input type="checkbox"/> ILS	<input type="checkbox"/> MarSup <input type="checkbox"/> MCI <input type="checkbox"/> MCTS <input type="checkbox"/> ME <input checked="" type="checkbox"/> MNS <input type="checkbox"/> MSET <input type="checkbox"/> Ops Business	<input type="checkbox"/> Refit and Maintenance <input type="checkbox"/> ROC <input type="checkbox"/> SAR <input type="checkbox"/> Science <input type="checkbox"/> Vessels of Concern <input type="checkbox"/> Other 	

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <div style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></div>	Given Name <div style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></div>	Initial(s) <div style="border: 1px solid black; display: inline-block; width: 50px; height: 1.2em; vertical-align: middle;"></div>	Age <div style="border: 1px solid black; display: inline-block; width: 50px; height: 1.2em; vertical-align: middle;"></div>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title <div style="border: 1px solid black; display: inline-block; width: 250px; height: 1.2em; vertical-align: middle;"></div>	
Years of experience in current position		<div style="border: 1px solid black; display: inline-block; width: 50px; height: 1.2em; vertical-align: middle;"></div>	
Employment Status			
<input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor			
<input type="checkbox"/> Other (Specify) 			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Juan de Fuca Strait - WCVI Transiting North

Date of Incident (YYYY-MM-DD)

2018-01-31

Time of Incident (Local)

15:39

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Unknown dust identified as containing Asbestos

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

January 31, 2018 - 1539 Results received from dust samples taken during Wheelhouse Console ACM Wiring Insulation IIR. Test results from the consoles fell in the high range compared with expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (iATL). In consultation with the RD Fleet, the vessel turned around and returned to Victoria and was secured @ 2350. Additionally results from dust samples taken in the Laundry Room after the cracked ACM bulkhead IIR clean-up fell in the moderate range compared with "experience standards".

February 1, 2018 - 0800 Northwest Environmental Group Limited (NWE) and Canadian HAZ-MAT were contacted to attend the vessel to develop a sampling/testing and remediation plan. NWE provided third party oversight of the remediation work and performed the visual and air clearance inspection and documentation. Bulk samples taken from wiring in MCR console due to similar morphology wiring which tested positive in the Wheelhouse. Sample results returned positive for 30% Chrysotile asbestos. Roll of packing in MCR STBD stores tested positive for 30% Chrysotile asbestos.

February 2, 2018 - 1000 NWE on-board to implement Background Asbestos Testing. Background testing was conducted to look for evidence of the spread of asbestos contamination. The test consists of surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether the fibres have been rendered airborne. 1630 the first set of results for the low volume air sampling were received and verbally conveyed by NWE, the results were below the level of detection 0.01f/ml. 1900 sample results conveyed by NWE from the longer running high volume pumps were also below the level of detection 0.01f/ml. NWE developed the Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments. Compartments or spaces included: Wheelhouse including consoles, Void Space below Wheelhouse due to open wire transits to Wheelhouse consoles, Laundry Room, MCR Console and MCR Stbd Stores.

February 3, 2018 - NWE returned to perform long duration (10 hours) sampling in the same locations. The sample volume must be greater than 1425 liters to qualify the results to prove the air meets the Air Clearance/Permissible Exposure Limit for continuous occupation of 0.01f/ml. Results received and some samples were above the limit of detection but below the limit of quantitation. NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are below WorksafeBC exposure limits"

Dust samples to couriered by NWE to iATL February 5, 2018 with quick turn around time of samples of 6 hours ordered. Hold up clearing customs at the border required re-sampling on Feb 8, 2018.

February 4, 2018 - Canadian Haz-mat began work cleaning Wheelhouse consoles with oversight provided by NWE.

February 5, 2018 - Canadian Haz-mat finished work in the Wheelhouse and started and finished work in the Laundry Room. Both spaces passed visual inspection by NWE.

February 6, 2018 - Canadian Haz-mat on-board removing thermocouple extension wire from ER and MCR console. MCR console cleaning started and completed. All unidentifiable packing disposed of through Canadian Hazmat. Stbd MCR cleaning started and completed. NWE air clearance samples from Wheelhouse and Laundry Room passed.

February 7, 2018 - Canadian Haz-mat on-board setup and performing cleaning in Bridge Void Space. Stbd MCR, ER, and MCR passed visuals inspection by NWE. NWE air clearance sampling from MCR and Stbd MCR taken and passed.

February 8, 2018 - Canadian Haz-mat onboard completed cleaning in Bridge Void Space. Space passed visual inspection by NWE. NWE air clearance sample from Bridge Void Space passed. Dust wipe samples retook in ER, MCR, and HVAC as the initial samples were still held up at customs.

February 9, 2018 - NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE: "We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits."

Dust sample results received: HVAC return and 3 of 4 samples from ER returned low or none detected. MCR console sample returned "moderate", this was directly below the ACM wire removals. The area was wet wiped after the sample taken. MCR passed air and visual clearance by NWE. As per NWE recommendation, console top was HEPA vacuumed. One sample taken from ER in an inaccessible place returned "elevated". Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: "Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer."

Follow up sampling to be conducted upon return to Victoria. Defect entered.

Reports attached:

- iATL dust wipe samples results
- NWE air sample test results alongside
- NWE Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments
- NWE Asbestos Air and Visual Clearance Documents for effected spaces
- NWE air sample test results while underway at sea conditions

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☒ Yes ☐ No

Specify

A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire insulation on the bridge. Restricting access and sampling the dust was the course of action upon receiving the wire insulation results. Void space, MCR console, MCR Stbd Stores and Laundry Room access was restricted upon receiving the results on asbestos-containing materials found.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?

☐ Yes ☒ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☒ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☐ Other action (Specify)

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Dust inside wheelhouse consoles contains asbestos. Additional wires of the same morphology as the ACM wires on the bridge found in the MCR console. NWE suspects the source of the dust is from pulling asbestos containing cabling throughout the years.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress <input type="checkbox"/> Fatigue <input type="checkbox"/> Lack of knowledge and/or skill <input type="checkbox"/> Physical stress or capability <input type="checkbox"/> Rushing or inattention <input type="checkbox"/> Other (Specify) <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	<input type="checkbox"/> Abuse or misuse of equipment <input type="checkbox"/> Inadequate engineering or design <input checked="" type="checkbox"/> Inadequate hazard assessment <input type="checkbox"/> Inadequate personnel to complete task <input type="checkbox"/> Inadequate tools/equipment/materials <input type="checkbox"/> Inadequate training and/or familiarization <input type="checkbox"/> Inadequate work standard/procedure <input type="checkbox"/> Lack of enforcement of procedure or supervision <input type="checkbox"/> Standards/procedures not developed <input type="checkbox"/> Wear and tear <input type="checkbox"/> Other (Specify) <div style="border: 1px solid black; height: 20px; width: 100%;"></div>

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

Incomplete identification and abatement of asbestos on-board. Depth and scope of previous Asbestos Surveys did not identify the wiring in these consoles.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson CE	250-882-1273	Steve Buss SE	250-213-3685
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Mike McCullagh CO	250-882-3864		

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Future Asbestos Management Surveys to include on-board air sampling and dust wipe samples.
 As per NWE recommendation future work inside Wheelhouse and MCR consoles and Wheelhouse Void to be considered asbestos work due difficulty of removing all the dust for the wiring, terminal strips, circuit boards/components, cloth wrap on wiring and bronze braid on the electrical cables.
 Work outside of normally accessed spaces/equipment may encounter the possibility of asbestos debris and be considered in the risk assessment prior to starting work.
 Vessel Specific Asbestos Management plan and labels updated to cover findings during the investigation.
 Upon return to Victoria additional dust sampling to be conducted in the ER/AMS as per NWE recommendations.
 Training arranged for 5 crew members for Asbestos Awareness and Abatement on February 22/23.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Marine Engineering	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, o=Coast Guard, ou=Coast Guard, email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.13 08:37:47 -0800</small>
Title Chief Engineer	Date (YYYY-MM-DD)	13/2/2017
Email address BartlettCE@ccgs-ngcc.gc.ca		

Investigators comments

Depending on the anticipated service life of the Bartlett, consideration should be given for a thorough abatement plan to be developed.
Future Asbestos Management Surveys to include regular air and dust sampling.
Bulk sampling frequency and scope to be increased to further identify/clear areas on-board of ACM.
At sea air sampling plan was developed with NWE, and performed to ensure air quality while at sea prior to returning the vessel to operational status.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Steve Buss	250-213-3685	Steve Buss <small>Digitally signed by Steve Buss DN: cn=Steve Buss, o=Canadian Coast Guard, ou=CFO, email=BartlettSE@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.13 08:45:05 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-02-13

Workplace OHS Committee Member/Health and Safety Representative comments

Investigation performed to complete satisfaction of the Workplace OHS Committee Member. A well thought out plan has been developed for future testing to ensure the health and safety of all crew members in the future.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@bar.ccg-ncgc.gc.ca, c=CA Date: 2018.02.13 09:15:53 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-02-13

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with corrective and preventative measures adopted, and the heightened awareness and vigilance with regard to ACM containing work spaces.

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and



the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at:
DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- ☐ Disabling Injury (visit to medical professional, time lost) ☐ Loss of Consciousness due to electric shock or toxic atmosphere
☐ First Aid ☐ Near Miss
☐ Minor Injury (visit to medical professional, no time lost) ☐ Pollution
☐ Activation of an Emergency Procedure ☐ Property Damage
☐ Fire or Explosion (Shore only) ☒ Unsatisfactory Condition
☐ Other (specify)

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard	Site/Vessel Name (and official number) CCGS Bartlett
Date of Report (YYYY-MM-DD) 2018-01-28	Mailing Address 25 Huron Street Victoria BC V8V 4V9
Name of Responsible Supervisor Matthew Jackson	Supervisor's Telephone # 250-882-1273

Organization (Select One)

- ☐ National HQ ☐ Coast Guard College ☒ Region (if selected, choose Directorate and Program/Branch below)

Regional Directorate (Select One)

- ☐ AC's Office ☒ Fleet ☐ IBMS ☐ ITS ☐ Incident Management ☐ Navigational Programs

Program/Branch (Select One)

- | | | |
|------------------------------------|---------------------------------------|---|
| <input type="checkbox"/> AtoN | <input type="checkbox"/> MarSup | <input checked="" type="checkbox"/> Refit and Maintenance |
| <input type="checkbox"/> Canso | <input type="checkbox"/> MCI | <input type="checkbox"/> ROC |
| <input type="checkbox"/> CGSS | <input type="checkbox"/> MCTS | <input type="checkbox"/> SAR |
| <input type="checkbox"/> E&I | <input type="checkbox"/> ME | <input type="checkbox"/> Science |
| <input type="checkbox"/> EFM (C&P) | <input type="checkbox"/> MNS | <input type="checkbox"/> Vessels of Concern |
| <input type="checkbox"/> ER | <input type="checkbox"/> MSET | <input type="checkbox"/> Other <input type="text"/> |
| <input type="checkbox"/> Ice | <input type="checkbox"/> Ops Business | |
| <input type="checkbox"/> ILS | | |

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <input type="text"/>	Given Name <input type="text"/>	Initial(s) <input type="text"/>	Age <input type="text"/>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male	Job Title <input type="text"/>	Years of experience in current position <input type="text"/>	
Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor <input type="checkbox"/> Other (Specify) <input type="text"/>			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Alongside Victoria Coast Guard Base Refit Period

Date of Incident (YYYY-MM-DD)

2018-01-24

Time of Incident (Local)

1600

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☐ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

January 22, 2018 - Electrical wire and insulation samples were taken from Wheelhouse Fire Detection Panel Console and Starboard Control Console to be tested for asbestos.
January 24, 2018 - Asbestos test results received, two of the seven samples wire samples returned positive for Chrysotile Asbestos (70%). The insulation tested positive while the wire wrap (jacket) tested negative. See attached pdf of test results. Recommendation from Northwest Environmental was to restrict access to location and consider any dust inside the console to be asbestos containing until samples were tested.
January 26, 2018 - Northwest Environmental returned to take dust samples from the two consoles. Discussing the wire insulation test results with the Project Manager from Northwest Environmental, the negative result of asbestos in the wire wrap is a good indication the dust may not contain asbestos, as chaffing wire wraps which contain asbestos due to vibration would be the greatest concern in the shedding asbestos fibers. Visual inspection of asbestos-containing wiring during dust sampling shows wire wrap in good overall condition. Samples couriered to a laboratory in New Jersey for analysis with a rush order (6-hour turnaround) requested on test results. Results expected January 30, 2018.
See attached photo of the wiring taken during dust sampling. Note the black wires not connected in the foreground and in the top wires in the bottom terminal strip are the wires which test result show contain asbestos insulation under the black wire wrap.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☐ Yes ☐ No

Specify

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☐ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☐ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☐ Other action (Specify)

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Use of wiring containing asbestos insulation during vessel construction. The asbestos insulated wire makes up part of the wiring in this console, other wires are rubber insulated with a cloth wrap or PVC insulated. The wiring in the Bridge consoles was not identified in the Asbestos Management Plan.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors

- ☐ Emotional stress
☐ Fatigue
☐ Lack of knowledge and/or skill
☐ Physical stress or capability
☐ Rushing or inattention
☐ Other (Specify)

Job Factors

- ☐ Abuse or misuse of equipment
☐ Inadequate engineering or design
☐ Inadequate hazard assessment
☐ Inadequate personnel to complete task
☐ Inadequate tools/equipment/materials
☐ Inadequate training and/or familiarization
☐ Inadequate work standard/procedure
☐ Lack of enforcement of procedure or supervision
☐ Standards/procedures not developed
☐ Wear and tear
☒ Other (Specify)

Incomplete identification and abatement of hazardous materials onboard

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

Electrical insulation on wires installed outside of high heat location had been overlooked in previous Asbestos Management Surveys. Asbestos-containing wiring connects via terminal strips to rubber insulated cloth wrapped wires which are part of rubber jacketed bronze armored cables. Unable to investigate the consoles further until test results are received.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson C/E	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Steve Buss S/E	250-882-1273		

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Currently awaiting test results of dust from consoles.
 Plan for abatement of dust and wiring to be determined based on results. Results expected January 30, 2018.
 Extensive work on the bridge consoles would be required if wiring is to be replaced.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Vessel Maintenance Manager	ASAP	

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, o=Coast Guard, ou=Coast Guard email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.27 10:52:32 -0800</small>
Title	Date (YYYY-MM-DD)	
Chief Engineer	2018-01-27	
Email address	BartlettCE@ccgs-ngcc.gc.ca	

Investigators comments

Surprising positive test result for asbestos in an application that would not benefit from the once thought of advantages of using this mineral. Wire and wire wrap (jacket) look to be in good condition. Awaiting test results of the surrounding dust to make decision on course of action.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Chris Couch	250.213.3685	Chris Couch <small>Digitally signed by Chris Couch DN: cn=Chris Couch, o=Canadian Coast Guard, ou=CCGS Bartlett email=BartlettCHO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 10:04:56 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Chief Officer	BartlettCHO@ccgs-ngcc.gc.ca	2018-01-28

Workplace OHS Committee Member/Health and Safety Representative comments

During this patrol's OHS Meeting, we will review the Safety Manual - Asbestos Containing Materials (7.A.10) to remind everyone of asbestos containing materials (ACM). We will also review the ship's Asbestos Management Plan (AMP). Concur with this report, and nothing further to add.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet ou=CCGS Bartlett, email=BartlettCO@bar-ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 10:09:41 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-01-28

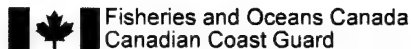
Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Asbestos Management plan updated to reflect ACM in bridge consuls.
Concur with proposed Corrective & Preventative Measures.

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the Canada Labour Code for the purpose of documenting hazardous occurrences.

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DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- ☐ Disabling Injury (visit to medical professional, time lost) ☐ Loss of Consciousness due to electric shock or toxic atmosphere
☐ First Aid ☐ Near Miss
☐ Minor Injury (visit to medical professional, no time lost) ☐ Pollution
☐ Activation of an Emergency Procedure ☐ Property Damage
☐ Fire or Explosion (Shore only) ☒ Unsatisfactory Condition
☐ Other (specify)

B. General Information (Required)

Employer's (Department) Name Coast Guard Fleet		Site/Vessel Name (and official number) CCGS Bartlett																									
Date of Report (YYYY-MM-DD) 2018-01-28	Mailing Address 25 Huron Street, Victoria, BC, V8V 4V9																										
Name of Responsible Supervisor M. McCullagh		Supervisor's Telephone # 250-882-3864																									
Organization (Select One)																											
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)																											
Regional Directorate (Select One)																											
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs																											
Program/Branch (Select One)																											
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<input type="checkbox"/> EFM (C&P)	<input checked="" type="checkbox"/> MNS	<input type="checkbox"/> Vessels of Concern																									
<input type="checkbox"/> ER	<input type="checkbox"/> MSET	<input type="checkbox"/> Other <input type="text"/>																									
<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business																										
<input type="checkbox"/> ILS																											

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <input type="text"/>	Given Name <input type="text"/>	Initial(s) <input type="text"/>	Age <input type="text"/>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title <input type="text"/>	Years of experience in current position <input type="text"/>
Employment Status			
<input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor			
<input type="checkbox"/> Other (Specify) <input type="text"/>			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Victoria Coast Guard Base

Date of Incident (YYYY-MM-DD)

2018-01-27

Time of Incident (Local)

1345

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Cracked seam in asbestos bulkhead

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of damage to panels.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☐ Yes ☐ No

Specify

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?

☐ Yes ☐ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions	Substandard Conditions
<input type="checkbox"/> Bypassing safety devices <input type="checkbox"/> Failure to check or monitor <input type="checkbox"/> Failure to communicate/coordinate <input type="checkbox"/> Failure to follow procedure/policy <input type="checkbox"/> Failure to identify hazard/risk <input type="checkbox"/> Failure to react/correct <input type="checkbox"/> Failure to service equipment properly <input type="checkbox"/> Failure to use PPE <input type="checkbox"/> Failure to warn or secure <input type="checkbox"/> Horseplay <input type="checkbox"/> Improper lifting <input type="checkbox"/> Improper loading, placing, mixing <input type="checkbox"/> Improper position/posture for task <input type="checkbox"/> Operating at improper speed <input type="checkbox"/> Using defective equipment <input type="checkbox"/> Using equipment improperly <input type="checkbox"/> Other action (Specify) <div></div>	<input type="checkbox"/> Congested or restricted area <input type="checkbox"/> Defective tools, equipment or materials <input type="checkbox"/> Excessive noise <input type="checkbox"/> Heat/cold exposure <input type="checkbox"/> Inadequate/improper PPE or use of PPE <input type="checkbox"/> Inadequate communication <input type="checkbox"/> Inadequate guards or barriers <input type="checkbox"/> Inadequate information/data <input type="checkbox"/> Inadequate instruction/procedure <input type="checkbox"/> Inadequate preparation/planning <input type="checkbox"/> Inadequate support/assistance <input type="checkbox"/> Inadequate ventilation <input type="checkbox"/> Inadequate warning system <input type="checkbox"/> Lack of tools, equipment or materials <input type="checkbox"/> Poor housekeeping <input checked="" type="checkbox"/> Presence of harmful materials <input type="checkbox"/> Radiation exposure <input type="checkbox"/> Uneven ground/terrain <input checked="" type="checkbox"/> Weather or environmental conditions <input type="checkbox"/> Other condition (Specify) <div></div>

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Suspected cause or contributing factor:

CCGS Bartlett was securing at Victoria Coast Guard Base. Wind was E'ly 29 knots, on Bartlett's port quarter, resulting in the setting of the starboard stern towards the jetty. Upon arrival the starboard stern quarter in way of the laundry room porthole tube touched a piling that is standing proud of the jetty face. This touching event may have cracked the interior asbestos bulkhead lining panel and joining seams.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress <input type="checkbox"/> Fatigue <input type="checkbox"/> Lack of knowledge and/or skill <input type="checkbox"/> Physical stress or capability <input type="checkbox"/> Rushing or inattention <input type="checkbox"/> Other (Specify) <div></div>	<input type="checkbox"/> Abuse or misuse of equipment <input type="checkbox"/> Inadequate engineering or design <input type="checkbox"/> Inadequate hazard assessment <input type="checkbox"/> Inadequate personnel to complete task <input type="checkbox"/> Inadequate tools/equipment/materials <input type="checkbox"/> Inadequate training and/or familiarization <input type="checkbox"/> Inadequate work standard/procedure <input type="checkbox"/> Lack of enforcement of procedure or supervision <input type="checkbox"/> Standards/procedures not developed <input type="checkbox"/> Wear and tear <input checked="" type="checkbox"/> Other (Specify) <div>Ship characteristics combined with weather.</div>

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

See attached excerpt from "CCGS Bartlett Maneuverability Discussion"

- Large sail area aft resulting in an "unbalanced" design affected by minimal cross-winds.
- The impact of having a significant sail area fully aft in conditions other than the wind directly ahead results in the transfer of the pivot point of the vessel forward thus producing a larger than expected lever effect.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Mike McCullagh CO	250-882-3864	Christopher Couch Ch/O	250-413-2800
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Matthew Jackson CE	250-882-1273	Joseph Van Der Sande 3rd/O	250-413-2800

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
Abatement contractor clean up of possibly asbestos containing debris. Encapsulation of exposed asbestos in bulkhead lining panels.	1,500\$

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Asbestos: Space secured against entry and signs posted. Abatement contractor to be contacted (on the next business day) to clean up debris and encapsulate the exposed asbestos.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer / Marine Engineering	2018-01-30	

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, ou=Coast Guard, ou=Coast Guard, email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 15:45:18 -0800</small>

Title	Chief Engineer	Date (YYYY-MM-DD)	2018-01-28
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Email address	BartlettCE@ccgs-ngcc.gc.ca
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Investigators comments

Quick action was taken to restrict access to a possibly contaminated space after discovery of the damaged bulkhead lining panels. Plan for clean up and encapsulation in place.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Chris Couch	250.423.2800	Chris Couch <small>Digitally signed by Chris Couch DN: cn=Chris Couch, o=Canadian Coast Guard, ou=CCGS Bartlett email=BartlettCHO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.25 15:51:00 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Chief Officer	BartlettCHO@ccgs-ngcc.gc.ca	2018-01-28

Workplace OHS Committee Member/Health and Safety Representative comments

I confirm that the laundry room has been secured to prevent entry by crew members.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 17:25:22 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-01-28

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- ☐ Disabling Injury (visit to medical professional, time lost) ☐ Loss of Consciousness due to electric shock or toxic atmosphere
☐ First Aid ☐ Near Miss
☐ Minor Injury (visit to medical professional, no time lost) ☐ Pollution
☐ Activation of an Emergency Procedure ☐ Property Damage
☐ Fire or Explosion (Shore only) ☒ Unsatisfactory Condition
☐ Other (specify)

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett	
Date of Report (YYYY-MM-DD) <input type="text"/>	Mailing Address 25 Huron Street, Victoria, BC, V8V 4V9		
Name of Responsible Supervisor Ross McKenzie		Supervisor's Telephone # 250-882-1273	
Organization (Select One)			
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)			
Regional Directorate (Select One)			
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs			
Program/Branch (Select One)			
<input type="checkbox"/> AtoN <input type="checkbox"/> MarSup <input checked="" type="checkbox"/> Refit and Maintenance <input type="checkbox"/> Canso <input type="checkbox"/> MCI <input type="checkbox"/> ROC <input type="checkbox"/> CGSS <input type="checkbox"/> MCTS <input type="checkbox"/> SAR <input type="checkbox"/> E&I <input type="checkbox"/> ME <input type="checkbox"/> Science <input type="checkbox"/> EFM (C&P) <input type="checkbox"/> MNS <input type="checkbox"/> Vessels of Concern <input type="checkbox"/> ER <input type="checkbox"/> MSET <input type="checkbox"/> Other <input type="text"/> <input type="checkbox"/> Ice <input type="checkbox"/> Ops Business <input type="checkbox"/> ILS			

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <input type="text"/>	Given Name <input type="text"/>	Initial(s) <input type="text"/>	Age <input type="text"/>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title <input type="text"/>	
Years of experience in current position <input type="text"/>		Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor	
<input type="checkbox"/> Other (Specify) <input type="text"/>			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Engine Room, CCGS Bartlett, Victoria Coast Guard Base, Victoria harbour

Date of Incident (YYYY-MM-DD) 2018.01.08 Time of Incident (Local) 0950 hours

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Hazardous material spill

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

The Bartlett was informed by our Asbestos consultant of a hazardous condition following a "routine" pre-work Hazardous Material Assessment prior to replacing the bulkhead insulation behind the Engineroom Dirty Oil Tank. We were advised to stay clear of and not disturb the pile of debris containing asbestos (old gasket material), and the lead paint used on the base below the tank, and to isolate that area of the engineroom - and to have suitable qualified professionals remove the hazards as ASAP. Contractor removed the ACM & Lead Paint hazards 2 days later, in preparation for the reinsulating the bulkheads.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident? ☒ Yes ☐ No

Specify

The hazardous material consultant taking the various hazardous materials samples was fully aware of the potential risks.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☒ No

Specify

N/A

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☐ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☒ Other action (Specify)

None on this occasion, but implies that there was possibly a failure to identify hazard at a previous time.

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

This is really a non-incident because the pre-work Hazardous Materials Assessment identified the hazards before the work was performed. However, prior to receiving the positive test results (for ACM & lead paint), it could be said that there was a "Failure to identify hazard/risk".

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors

- ☐ Emotional stress
- ☐ Fatigue
- ☐ Lack of knowledge and/or skill
- ☐ Physical stress or capability
- ☐ Rushing or inattention
- ☒ Other (Specify)

This really was a non-incident, because the hazards were identified before work commenced in that area.

Job Factors

- ☐ Abuse or misuse of equipment
- ☐ Inadequate engineering or design
- ☐ Inadequate hazard assessment
- ☐ Inadequate personnel to complete task
- ☐ Inadequate tools/equipment/materials
- ☐ Inadequate training and/or familiarization
- ☐ Inadequate work standard/procedure
- ☐ Lack of enforcement of procedure or supervision
- ☐ Standards/procedures not developed
- ☐ Wear and tear
- ☒ Other (Specify)

This really was a non-incident, because the hazards were identified before work commenced in that area.

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

The "incident" per se, was the identification of several hazards, and the leading cause was prudence & foresight.

If the existence of the the hazardous materials debris is construed as an incident in itself, I think that would prove fruitless, considering that the history of the ACM debris is unknown and it was nevertheless dealt with correctly.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Ross McKenzie	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
N/A	0

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Corrective action to prevent recurrence of hazardous materials identification?

To prevent the existence of hazardous materials would be to identify them all, and remove them all, but moreover, and perhaps the only useful information to be gained from this IIR is to potentially alert crews that ACM & lead paint are potential hazards to be encountered on the ship.

The debris & the lead paint were found below a Waste Oil Tank that had possibly never been removed since it was installed 49 years ago.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Ross McKenzie	2018-01-11	2018-01-11

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Ross McKenzie	250-882-1273	Ross McKenzie

Digitally signed by Ross McKenzie
DN: cn=Ross McKenzie, o=Canadian Coast Guard, ou=CCGS Bartlett,
email=rossmckenzie@ccgs.gc.ca, c=CA
Date: 2018.01.20 10:45:05 -0800

Title	Chief Engineer	Date (YYYY-MM-DD)	2018-01-20
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Email address	BartlettCE@ccgs-ngcc.gc.ca
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Investigators comments

The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Ryan Moore	250-882-1273	Ryan N. Moore <small>Digitally signed by Ryan N. Moore DN: cn=Ryan N. Moore, o=Canadian Coast Guard, ou=DFO, email=Ryan.Moore@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.20 15:54:56 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-01-20

Workplace OHS Committee Member/Health and Safety Representative comments

Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.02 10:15:27 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-02-02

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with intent of IRR

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Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

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INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- ☐ Disabling Injury (visit to medical professional, time lost) ☐ Loss of Consciousness due to electric shock or toxic atmosphere
☐ First Aid ☐ Near Miss
☐ Minor Injury (visit to medical professional, no time lost) ☐ Pollution
☐ Activation of an Emergency Procedure ☐ Property Damage
☐ Fire or Explosion (Shore only) ☒ Unsatisfactory Condition
☐ Other (specify)

B. General Information (Required)

Employer's (Department) Name Site/Vessel Name (and official number)

Date of Report (YYYY-MM-DD) Mailing Address

Name of Responsible Supervisor Supervisor's Telephone #

Organization (Select One)

☐ National HQ ☐ Coast Guard College ☒ Region (if selected, choose Directorate and Program/Branch below)

Regional Directorate (Select One)

☐ AC's Office ☒ Fleet ☐ IBMS ☐ ITS ☐ Incident Management ☐ Navigational Programs

Program/Branch (Select One)

- | | | |
|------------------------------------|---------------------------------------|---|
| <input type="checkbox"/> AtoN | <input type="checkbox"/> MarSup | <input checked="" type="checkbox"/> Refit and Maintenance |
| <input type="checkbox"/> Canso | <input type="checkbox"/> MCI | <input type="checkbox"/> ROC |
| <input type="checkbox"/> CGSS | <input type="checkbox"/> MCTS | <input type="checkbox"/> SAR |
| <input type="checkbox"/> E&I | <input type="checkbox"/> ME | <input type="checkbox"/> Science |
| <input type="checkbox"/> EFM (C&P) | <input type="checkbox"/> MNS | <input type="checkbox"/> Vessels of Concern |
| <input type="checkbox"/> ER | <input type="checkbox"/> MSET | <input type="checkbox"/> Other <input type="text"/> |
| <input type="checkbox"/> Ice | <input type="checkbox"/> Ops Business | |
| <input type="checkbox"/> ILS | | |

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname Given Name Initial(s) Age

Gender ☐ Female ☐ Male Job Title Years of experience in current position

Employment Status

☐ Indeterminate ☐ Term ☐ Casual/Relief ☐ Program Client ☐ Student ☐ Contractor

☐ Other (Specify)

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Engine Room, CCGS Bartlett, Victoria Coast Guard Base, Victoria harbour

Date of Incident (YYYY-MM-DD) 2018.01.08 Time of Incident (Local) 0950 hours

Body part injured (if applicable)

<input type="checkbox"/> Abdomen	<input type="checkbox"/> Back	<input type="checkbox"/> Eye	<input type="checkbox"/> Neck	<input type="checkbox"/> Knee	<input type="checkbox"/> Pelvis / Groin
<input type="checkbox"/> Arm	<input type="checkbox"/> Body System / Internal	<input type="checkbox"/> Foot	<input type="checkbox"/> Head	<input type="checkbox"/> Leg	<input type="checkbox"/> Shoulder
<input type="checkbox"/> Auditory	<input type="checkbox"/> Chest	<input type="checkbox"/> Hand	<input type="checkbox"/> Hip	<input type="checkbox"/> Multiple injuries	<input type="checkbox"/> Unknown

Nature of injury (if known)

<input type="checkbox"/> Burns	<input type="checkbox"/> Multiple Injuries
<input type="checkbox"/> Fractures	<input type="checkbox"/> Traumatic joint/ligament and muscle/tendon injury
<input type="checkbox"/> Injury to Nerves and Spinal Cord	<input type="checkbox"/> Wounds, Lacerations and Amputations
<input type="checkbox"/> Intracranial Injury	<input type="checkbox"/> Unknown

E. Investigation Information (Required)

Type of Event

<input type="checkbox"/> Caught in or between	<input type="checkbox"/> Exposure to a traumatic event	<input type="checkbox"/> Slips, trips and falls
<input type="checkbox"/> Contact with harmful substance	<input type="checkbox"/> Mechanical/Equipment Failure	<input type="checkbox"/> Struck by or against
<input type="checkbox"/> Exposure to Electricity	<input type="checkbox"/> Mechanism of harm unknown	<input type="checkbox"/> Vehicle incident
<input type="checkbox"/> Exposure to Fire	<input type="checkbox"/> Overexertion	<input checked="" type="checkbox"/> Other (specify)
<input type="checkbox"/> Exposure to heat/cold	<input type="checkbox"/> Repetitive Motion	
<input type="checkbox"/> Exposure to noise		Hazardous material spill

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

The Bartlett was informed by our Asbestos consultant of a hazardous condition following a "routine" pre-work Hazardous Material Assessment prior to replacing the bulkhead insulation behind the Engineroom Dirty Oil Tank. We were advised to stay clear of and not disturb the pile of debris containing asbestos (old gasket material), and the lead paint used on the base below the tank, and to isolate that area of the engineroom - and to have suitable qualified professionals remove the hazards as ASAP. Contractor removed the ACM & Lead Paint hazards 2 days later, in preparation for the reinsulating the bulkheads.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident? ☒ Yes ☐ No

Specify

The hazardous material consultant (NWE) taking the various hazardous materials samples was fully aware of the potential risks.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☒ No

Specify

N/A

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☐ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☒ Other action (Specify)

None on this occasion, but implies that there was possibly a failure to identify hazard at a previous time.

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

This is really a non-incident because the pre-work Hazardous Materials Assessment identified the hazards before the work was performed. However, prior to receiving the positive test results (for ACM & lead paint), it could be said that there was a "Failure to identify hazard/risk".

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors

- ☐ Emotional stress
- ☐ Fatigue
- ☐ Lack of knowledge and/or skill
- ☐ Physical stress or capability
- ☐ Rushing or inattention
- ☒ Other (Specify)

This "incident" was merely the discovery of 2 hazardous materials in a routine Hazardous Materials Assessment where we had not expected to find any.

Job Factors

- ☐ Abuse or misuse of equipment
- ☐ Inadequate engineering or design
- ☐ Inadequate hazard assessment
- ☐ Inadequate personnel to complete task
- ☐ Inadequate tools/equipment/materials
- ☐ Inadequate training and/or familiarization
- ☐ Inadequate work standard/procedure
- ☐ Lack of enforcement of procedure or supervision
- ☐ Standards/procedures not developed
- ☐ Wear and tear
- ☒ Other (Specify)

A Routine Risk Assessment revealed the presence of previously unknown hazardous materials in the area where the contractors were scheduled to work.

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

The "incident" per se, was the identification of several hazardous materials (ACM gasket remnants & lead paint).

The existence of the the hazardous materials debris (in an areas where we had not expected to encounter the hazardous materials) is the incident in itself. The materials were discovered in a pre-work assessment, and this is the first incident of asbestos gasket material discovery, and the identification of the lead paint hazard.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Ross McKenzie	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
N/A	0

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Identifying the hazardous materials prior to commencing a job that involves the presence of hazardous materials (such as ACM & lead paint) is the next best thing to identifying them all , and remove them, and moreover, and perhaps the most useful information to be gained from this IIR is to alert crews that ACM gaskets & lead paint are potential hazards to be encountered on the ship.

The debris & the lead paint were found below a Waste Oil Tank that had possibly never been removed since it was installed 49 years ago.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Ross McKenzie	2018-01-11	2018-01-11

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Ross McKenzie	250-882-1273	Ross McKenzie

Digitally signed by Ross McKenzie
DN: cn=Ross McKenzie, o=Canadian Coast Guard, ou=CCGS Bartlett
email=barlettce@ccgs-ngcc.gc.ca, c=CA
Date: 2018.01.20 10:45:05 -0800

Title	Chief Engineer	Date (YYYY-MM-DD)	2018-01-20
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Email address BartlettCE@ccgs-ngcc.gc.ca

Investigators comments

The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Ryan Moore	250-882-1273	Ryan N. Moore <small>Digitally signed by Ryan N. Moore DN: cn=Ryan N. Moore, o=Canadian Coast Guard, ou=DFO, email=Ryan.Moore@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.20 15:54:56-0800</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-01-20

Workplace OHS Committee Member/Health and Safety Representative comments

Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.02 10:15:27 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-02-02

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with intent of IRR

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at:

DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

Sheppard, Frederick

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: March 1, 2018 12:44 PM
To: CCGS-NGCC, Bartlett Logistics Officer
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: Re: Recent ACM IIR History
Attachments: Wheelhouse Console Dust Sampling.pdf; Wheelhouse Console ACM - Wiring Insulation.pdf; Laundry Room Bulkhead.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.5 01.03.2018.pdf

Importance: High

Cam,

Here's my list of recent ACM IIRs (Asbestos Containing Materials). I do not have any record of them being sent ashore.

1. Wheelhouse Console Dust Sampling 2018-01-12
2. Wheelhouse Console ACM – Wiring Insulation 2018-01-28
3. Laundry Room Bulkhead 2018-01-28
4. IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018. But please note that this was a WC IIR signed by Captain McCullagh, and that I have revised wording as document:.....
- 4b. IIR Eng.Room ACM Debris and Lead Paint Ver.5 09.01.2018 And Captain M.Shuckburgh may or may not need to or want to sign this depending on whether it has been submitted ashore.

Thanks,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|--|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) <input type="text"/> | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett																									
Date of Report (YYYY-MM-DD)		Mailing Address	25 Huron Street, Victoria, BC, V8V 4V9																								
Name of Responsible Supervisor Ross McKenzie		Supervisor's Telephone # 250-882-1273																									
Organization (Select One)																											
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)																											
Regional Directorate (Select One)																											
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs																											
Program/Branch (Select One)																											
<table border="0"> <tr> <td><input type="checkbox"/> AtoN</td> <td><input type="checkbox"/> MarSup</td> <td><input checked="" type="checkbox"/> Refit and Maintenance</td> </tr> <tr> <td><input type="checkbox"/> Canso</td> <td><input type="checkbox"/> MCI</td> <td><input type="checkbox"/> ROC</td> </tr> <tr> <td><input type="checkbox"/> CGSS</td> <td><input type="checkbox"/> MCTS</td> <td><input type="checkbox"/> SAR</td> </tr> <tr> <td><input type="checkbox"/> E&I</td> <td><input type="checkbox"/> ME</td> <td><input type="checkbox"/> Science</td> </tr> <tr> <td><input type="checkbox"/> EFM (C&P)</td> <td><input type="checkbox"/> MNS</td> <td><input type="checkbox"/> Vessels of Concern</td> </tr> <tr> <td><input type="checkbox"/> ER</td> <td><input type="checkbox"/> MSET</td> <td><input type="checkbox"/> Other <input type="text"/></td> </tr> <tr> <td><input type="checkbox"/> Ice</td> <td><input type="checkbox"/> Ops Business</td> <td></td> </tr> <tr> <td><input type="checkbox"/> ILS</td> <td></td> <td></td> </tr> </table>				<input type="checkbox"/> AtoN	<input type="checkbox"/> MarSup	<input checked="" type="checkbox"/> Refit and Maintenance	<input type="checkbox"/> Canso	<input type="checkbox"/> MCI	<input type="checkbox"/> ROC	<input type="checkbox"/> CGSS	<input type="checkbox"/> MCTS	<input type="checkbox"/> SAR	<input type="checkbox"/> E&I	<input type="checkbox"/> ME	<input type="checkbox"/> Science	<input type="checkbox"/> EFM (C&P)	<input type="checkbox"/> MNS	<input type="checkbox"/> Vessels of Concern	<input type="checkbox"/> ER	<input type="checkbox"/> MSET	<input type="checkbox"/> Other <input type="text"/>	<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business		<input type="checkbox"/> ILS		
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<input type="checkbox"/> ER	<input type="checkbox"/> MSET	<input type="checkbox"/> Other <input type="text"/>																									
<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business																										
<input type="checkbox"/> ILS																											

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname	<input type="text"/>	Given Name	<input type="text"/>	Initial(s)	<input type="text"/>	Age	<input type="text"/>
Gender	<input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title	<input type="text"/>		Years of experience in current position	<input type="text"/>
Employment Status							
<input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor							
<input type="checkbox"/> Other (Specify) <input type="text"/>							

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Engine Room, CCGS Bartlett, Victoria Coast Guard Base, Victoria harbour

Date of Incident (YYYY-MM-DD)

2018.01.08

Time of Incident (Local)

0950 hours

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Hazardous material spill

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

The Bartlett was informed by our Asbestos consultant of a hazardous condition following a "routine" pre-work Hazardous Material Assessment prior to replacing the bulkhead insulation behind the Engineroom Dirty Oil Tank. We were advised to stay clear of and not disturb the pile of debris containing asbestos (old gasket material), and the lead paint used on the base below the tank, and to isolate that area of the engineroom - and to have suitable qualified professionals remove the hazards as ASAP. Contractor removed the ACM & Lead Paint hazards 2 days later, in preparation for the reinsulating the bulkheads.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☒ Yes ☐ No

Specify

The hazardous material consultant (NWE) taking the various hazardous materials samples was fully aware of the potential risks.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?

☐ Yes ☒ No

Specify

N/A

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions	Substandard Conditions
<input type="checkbox"/> Bypassing safety devices <input type="checkbox"/> Failure to check or monitor <input type="checkbox"/> Failure to communicate/coordinate <input type="checkbox"/> Failure to follow procedure/policy <input type="checkbox"/> Failure to identify hazard/risk <input type="checkbox"/> Failure to react/correct <input type="checkbox"/> Failure to service equipment properly <input type="checkbox"/> Failure to use PPE <input type="checkbox"/> Failure to warn or secure <input type="checkbox"/> Horseplay <input type="checkbox"/> Improper lifting <input type="checkbox"/> Improper loading, placing, mixing <input type="checkbox"/> Improper position/posture for task <input type="checkbox"/> Operating at improper speed <input type="checkbox"/> Using defective equipment <input type="checkbox"/> Using equipment improperly <input checked="" type="checkbox"/> Other action (Specify)	<input type="checkbox"/> Congested or restricted area <input type="checkbox"/> Defective tools, equipment or materials <input type="checkbox"/> Excessive noise <input type="checkbox"/> Heat/cold exposure <input type="checkbox"/> Inadequate/improper PPE or use of PPE <input type="checkbox"/> Inadequate communication <input type="checkbox"/> Inadequate guards or barriers <input type="checkbox"/> Inadequate information/data <input type="checkbox"/> Inadequate instruction/procedure <input type="checkbox"/> Inadequate preparation/planning <input type="checkbox"/> Inadequate support/assistance <input type="checkbox"/> Inadequate ventilation <input type="checkbox"/> Inadequate warning system <input type="checkbox"/> Lack of tools, equipment or materials <input type="checkbox"/> Poor housekeeping <input checked="" type="checkbox"/> Presence of harmful materials <input type="checkbox"/> Radiation exposure <input type="checkbox"/> Uneven ground/terrain <input type="checkbox"/> Weather or environmental conditions <input type="checkbox"/> Other condition (Specify)
<div>None on this occasion, but implies that there was possibly a failure to identify hazard at a previous time.</div>	

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

This is really a non-incident because the pre-work Hazardous Materials Assessment identified the hazards before the work was performed. However, prior to receiving the positive test results (for ACM & lead paint), it could be said that there was a "Failure to identify hazard/risk".

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress <input type="checkbox"/> Fatigue <input type="checkbox"/> Lack of knowledge and/or skill <input type="checkbox"/> Physical stress or capability <input type="checkbox"/> Rushing or inattention <input checked="" type="checkbox"/> Other (Specify)	<input type="checkbox"/> Abuse or misuse of equipment <input type="checkbox"/> Inadequate engineering or design <input type="checkbox"/> Inadequate hazard assessment <input type="checkbox"/> Inadequate personnel to complete task <input type="checkbox"/> Inadequate tools/equipment/materials <input type="checkbox"/> Inadequate training and/or familiarization <input type="checkbox"/> Inadequate work standard/procedure <input type="checkbox"/> Lack of enforcement of procedure or supervision <input type="checkbox"/> Standards/procedures not developed <input type="checkbox"/> Wear and tear <input checked="" type="checkbox"/> Other (Specify)
<div>This "incident" was merely the discovery of 2 hazardous materials in a routine Hazardous Materials Assessment where we had not expected to find any.</div>	<div>A Routine Risk Assessment revealed the presence of previously unknown hazardous materials in the area where the contractors were scheduled to work.</div>

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

The "incident" per se, was the identification of several hazardous materials (ACM gasket remnants & lead paint).

The existence of the the hazardous materials debris (in an areas where we had not expected to encounter the hazardous materials) is the incident in itself. The materials were discovered in a pre-work assessment, and this is the first incident of asbestos gasket material discovery, and the identification of the lead paint hazard.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Ross McKenzie	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
N/A	0

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Identifying the hazardous materials prior to commencing a job that involves the presence of hazardous materials (such as ACM & lead paint) is the next best thing to identifying them all, and remove them, and moreover, and perhaps the most useful information to be gained from this IIR is to alert crews that ACM gaskets & lead paint are potential hazards to be encountered on the ship.

The debris & the lead paint were found below a Waste Oil Tank that had possibly never been removed since it was installed 49 years ago.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Ross McKenzie	2018-01-11	2018-01-11

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Ross McKenzie	250-882-1273	Ross McKenzie

Digitally signed by Ross McKenzie
DN: cn=Ross McKenzie, o=Canadian Coast Guard, ou=CCGS Bartlett,
email=barlettce@ccgs.gc.ca, c=CA
Date: 2018.01.20 10:45:05-0800

Title	Chief Engineer	Date (YYYY-MM-DD)	2018-01-20
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Email address	BartlettCE@ccgs-ngcc.gc.ca
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Investigators comments

The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Ryan Moore	250-882-1273	Ryan N. Moore <small>Digitally signed by Ryan N. Moore DN: cn=Ryan N. Moore, o=Canadian Coast Guard, ou=DFO, email=Ryan.Moore@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.20 16:54:56 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-01-20

Workplace OHS Committee Member/Health and Safety Representative comments

Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@bar.ccgcc-ngcc.gc.ca, c=CA Date: 2018.02.02 10:15:27 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-02-02

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with intent of IRR

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- ☐ Disabling Injury (visit to medical professional, time lost) ☐ Loss of Consciousness due to electric shock or toxic atmosphere
☐ First Aid ☐ Near Miss
☐ Minor Injury (visit to medical professional, no time lost) ☐ Pollution
☐ Activation of an Emergency Procedure ☐ Property Damage
☐ Fire or Explosion (Shore only) ☒ Unsatisfactory Condition
☐ Other (specify)

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard	Site/Vessel Name (and official number) CCGS Bartlett
Date of Report (YYYY-MM-DD) <input type="text"/>	Mailing Address 25 Huron Street, Victoria, BC, V8V 4V9
Name of Responsible Supervisor Ross McKenzie	Supervisor's Telephone # 250-882-1273

Organization (Select One)

- ☐ National HQ ☐ Coast Guard College ☒ Region (if selected, choose Directorate and Program/Branch below)

Regional Directorate (Select One)

- ☐ AC's Office ☒ Fleet ☐ IBMS ☐ ITS ☐ Incident Management ☐ Navigational Programs

Program/Branch (Select One)

- | | | |
|------------------------------------|---------------------------------------|---|
| <input type="checkbox"/> AtoN | <input type="checkbox"/> MarSup | <input checked="" type="checkbox"/> Refit and Maintenance |
| <input type="checkbox"/> Canso | <input type="checkbox"/> MCI | <input type="checkbox"/> ROC |
| <input type="checkbox"/> CGSS | <input type="checkbox"/> MCTS | <input type="checkbox"/> SAR |
| <input type="checkbox"/> E&I | <input type="checkbox"/> ME | <input type="checkbox"/> Science |
| <input type="checkbox"/> EFM (C&P) | <input type="checkbox"/> MNS | <input type="checkbox"/> Vessels of Concern |
| <input type="checkbox"/> ER | <input type="checkbox"/> MSET | <input type="checkbox"/> Other <input type="text"/> |
| <input type="checkbox"/> Ice | <input type="checkbox"/> Ops Business | |
| <input type="checkbox"/> ILS | | |

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <input type="text"/>	Given Name <input type="text"/>	Initial(s) <input type="text"/>	Age <input type="text"/>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male	Job Title <input type="text"/>	Years of experience in current position <input type="text"/>	
Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor <input type="checkbox"/> Other (Specify) <input type="text"/>			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Engine Room, CCGS Bartlett, Victoria Coast Guard Base, Victoria harbour

Date of Incident (YYYY-MM-DD) 2018.01.08

Time of Incident (Local) 0950 hours

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Hazardous material spill

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

The Bartlett was informed by our Asbestos consultant of a hazardous condition following a "routine" pre-work Hazardous Material Assessment prior to replacing the bulkhead insulation behind the Engineroom Dirty Oil Tank. We were advised to stay clear of and not disturb the pile of debris containing asbestos (old gasket material), and the lead paint used on the base below the tank, and to isolate that area of the engineroom - and to have suitable qualified professionals remove the hazards as ASAP. Contractor removed the ACM & Lead Paint hazards 2 days later, in preparation for the reinsulating the bulkheads.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident? ☒ Yes ☐ No

Specify

The hazardous material consultant taking the various hazardous materials samples was fully aware of the potential risks.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☒ No

Specify

N/A

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions	Substandard Conditions
<input type="checkbox"/> Bypassing safety devices <input type="checkbox"/> Failure to check or monitor <input type="checkbox"/> Failure to communicate/coordinate <input type="checkbox"/> Failure to follow procedure/policy <input type="checkbox"/> Failure to identify hazard/risk <input type="checkbox"/> Failure to react/correct <input type="checkbox"/> Failure to service equipment properly <input type="checkbox"/> Failure to use PPE <input type="checkbox"/> Failure to warn or secure <input type="checkbox"/> Horseplay <input type="checkbox"/> Improper lifting <input type="checkbox"/> Improper loading, placing, mixing <input type="checkbox"/> Improper position/posture for task <input type="checkbox"/> Operating at improper speed <input type="checkbox"/> Using defective equipment <input type="checkbox"/> Using equipment improperly <input checked="" type="checkbox"/> Other action (Specify)	<input type="checkbox"/> Congested or restricted area <input type="checkbox"/> Defective tools, equipment or materials <input type="checkbox"/> Excessive noise <input type="checkbox"/> Heat/cold exposure <input type="checkbox"/> Inadequate/improper PPE or use of PPE <input type="checkbox"/> Inadequate communication <input type="checkbox"/> Inadequate guards or barriers <input type="checkbox"/> Inadequate information/data <input type="checkbox"/> Inadequate instruction/procedure <input type="checkbox"/> Inadequate preparation/planning <input type="checkbox"/> Inadequate support/assistance <input type="checkbox"/> Inadequate ventilation <input type="checkbox"/> Inadequate warning system <input type="checkbox"/> Lack of tools, equipment or materials <input type="checkbox"/> Poor housekeeping <input checked="" type="checkbox"/> Presence of harmful materials <input type="checkbox"/> Radiation exposure <input type="checkbox"/> Uneven ground/terrain <input type="checkbox"/> Weather or environmental conditions <input type="checkbox"/> Other condition (Specify)
<p>None on this occasion, but implies that there was possibly a failure to identify hazard at a previous time.</p>	

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

This is really a non-incident because the pre-work Hazardous Materials Assessment identified the hazards before the work was performed. However, prior to receiving the positive test results (for ACM & lead paint), it could be said that there was a "Failure to identify hazard/risk".

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress <input type="checkbox"/> Fatigue <input type="checkbox"/> Lack of knowledge and/or skill <input type="checkbox"/> Physical stress or capability <input type="checkbox"/> Rushing or inattention <input checked="" type="checkbox"/> Other (Specify)	<input type="checkbox"/> Abuse or misuse of equipment <input type="checkbox"/> Inadequate engineering or design <input type="checkbox"/> Inadequate hazard assessment <input type="checkbox"/> Inadequate personnel to complete task <input type="checkbox"/> Inadequate tools/equipment/materials <input type="checkbox"/> Inadequate training and/or familiarization <input type="checkbox"/> Inadequate work standard/procedure <input type="checkbox"/> Lack of enforcement of procedure or supervision <input type="checkbox"/> Standards/procedures not developed <input type="checkbox"/> Wear and tear <input checked="" type="checkbox"/> Other (Specify)
<p>This really was a non-incident, because the hazards were identified before work commenced in that area.</p>	<p>This really was a non-incident, because the hazards were identified before work commenced in that area.</p>

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

The "incident" per se, was the identification of several hazards, and the leading cause was prudence & foresight.

If the existence of the the hazardous materials debris is construed as an incident in itself, I think that would prove fruitless, considering that the history of the ACM debris is unknown and it was nevertheless dealt with correctly.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Ross McKenzie	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
N/A	0

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Corrective action to prevent recurrence of hazardous materials identification?

To prevent the existence of hazardous materials would be to identify them all, and remove them all, but moreover, and perhaps the only useful information to be gained from this IIR is to potentially alert crews that ACM & lead paint are potential hazards to be encountered on the ship.

The debris & the lead paint were found below a Waste Oil Tank that had possibly never been removed since it was installed 49 years ago.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Ross McKenzie	2018-01-11	2018-01-11

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Ross McKenzie	250-882-1273	Ross McKenzie

Digitally signed by Ross McKenzie
DN: cn=Ross McKenzie, o=Canadian Coast Guard, ou=CCGS Bartlett,
email=barlett.ross@ccgs.gc.ca, c=CA
Date: 2018.01.20 10:45:05 -0800

Title	Chief Engineer	Date (YYYY-MM-DD)	2018-01-20
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Email address	BarlettCE@ccgs-ngcc.gc.ca
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Investigators comments

The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Ryan Moore	250-882-1273	Ryan N. Moore <small>Digitally signed by Ryan N. Moore DN: cn=Ryan N. Moore, o=Canadian Coast Guard, ou=DFO email=Ryan.Moore@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.20 15:54:56 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-01-20

Workplace OHS Committee Member/Health and Safety Representative comments

Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@bar.ccg-ngcc.gc.ca, c=CA Date: 2018.02.02 10:15:27 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-02-02

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with intent of IRR

Privacy Notice

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Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|---|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) | |

B. General Information (Required)

Employer's (Department) Name <div style="border: 1px solid black; padding: 2px;">Coast Guard Fleet</div>		Site/Vessel Name (and official number) <div style="border: 1px solid black; padding: 2px;">CCGS Bartlett</div>	
Date of Report (YYYY-MM-DD) <div style="border: 1px solid black; padding: 2px;">2018-01-28</div>	Mailing Address <div style="border: 1px solid black; padding: 2px;">25 Huron Street, Victoria, BC, V8V 4V9</div>		
Name of Responsible Supervisor <div style="border: 1px solid black; padding: 2px;">M. McCullagh</div>		Supervisor's Telephone # <div style="border: 1px solid black; padding: 2px;">250-882-3864</div>	
Organization (Select One)			
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)			
Regional Directorate (Select One)			
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs			
Program/Branch (Select One)			
<input type="checkbox"/> AtoN <input type="checkbox"/> Canso <input type="checkbox"/> CGSS <input type="checkbox"/> E&I <input type="checkbox"/> EFM (C&P) <input type="checkbox"/> ER <input type="checkbox"/> Ice <input type="checkbox"/> ILS	<input type="checkbox"/> MarSup <input type="checkbox"/> MCI <input type="checkbox"/> MCTS <input type="checkbox"/> ME <input checked="" type="checkbox"/> MNS <input type="checkbox"/> MSET <input type="checkbox"/> Ops Business	<input type="checkbox"/> Refit and Maintenance <input type="checkbox"/> ROC <input type="checkbox"/> SAR <input type="checkbox"/> Science <input type="checkbox"/> Vessels of Concern <input type="checkbox"/> Other 	

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <div style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></div>	Given Name <div style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></div>	Initial(s) <div style="border: 1px solid black; display: inline-block; width: 50px; height: 1.2em; vertical-align: middle;"></div>	Age <div style="border: 1px solid black; display: inline-block; width: 50px; height: 1.2em; vertical-align: middle;"></div>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title <div style="border: 1px solid black; display: inline-block; width: 200px; height: 1.2em; vertical-align: middle;"></div>	
		Years of experience in current position <div style="border: 1px solid black; display: inline-block; width: 50px; height: 1.2em; vertical-align: middle;"></div>	
Employment Status			
<input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor			
<input type="checkbox"/> Other (Specify) 			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Victoria Coast Guard Base

Date of Incident (YYYY-MM-DD)

2018-01-27

Time of Incident (Local)

1345

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Cracked seam in asbestos bulkhead

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of damage to panels.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☐ Yes ☐ No

Specify

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?

☐ Yes ☐ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions	Substandard Conditions
<input type="checkbox"/> Bypassing safety devices	<input type="checkbox"/> Congested or restricted area
<input type="checkbox"/> Failure to check or monitor	<input type="checkbox"/> Defective tools, equipment or materials
<input type="checkbox"/> Failure to communicate/coordinate	<input type="checkbox"/> Excessive noise
<input type="checkbox"/> Failure to follow procedure/policy	<input type="checkbox"/> Heat/cold exposure
<input type="checkbox"/> Failure to identify hazard/risk	<input type="checkbox"/> Inadequate/improper PPE or use of PPE
<input type="checkbox"/> Failure to react/correct	<input type="checkbox"/> Inadequate communication
<input type="checkbox"/> Failure to service equipment properly	<input type="checkbox"/> Inadequate guards or barriers
<input type="checkbox"/> Failure to use PPE	<input type="checkbox"/> Inadequate information/data
<input type="checkbox"/> Failure to warn or secure	<input type="checkbox"/> Inadequate instruction/procedure
<input type="checkbox"/> Horseplay	<input type="checkbox"/> Inadequate preparation/planning
<input type="checkbox"/> Improper lifting	<input type="checkbox"/> Inadequate support/assistance
<input type="checkbox"/> Improper loading, placing, mixing	<input type="checkbox"/> Inadequate ventilation
<input type="checkbox"/> Improper position/posture for task	<input type="checkbox"/> Inadequate warning system
<input type="checkbox"/> Operating at improper speed	<input type="checkbox"/> Lack of tools, equipment or materials
<input type="checkbox"/> Using defective equipment	<input type="checkbox"/> Poor housekeeping
<input type="checkbox"/> Using equipment improperly	<input checked="" type="checkbox"/> Presence of harmful materials
<input type="checkbox"/> Other action (Specify)	<input type="checkbox"/> Radiation exposure
	<input type="checkbox"/> Uneven ground/terrain
	<input checked="" type="checkbox"/> Weather or environmental conditions
	<input type="checkbox"/> Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Suspected cause or contributing factor:

CCGS Bartlett was securing at Victoria Coast Guard Base. Wind was E'ly 29 knots, on Bartlett's port quarter, resulting in the setting of the starboard stern towards the jetty. Upon arrival the starboard stern quarter in way of the laundry room porthole tube touched a piling that is standing proud of the jetty face. This touching event may have cracked the interior asbestos bulkhead lining panel and joining seams.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress	<input type="checkbox"/> Abuse or misuse of equipment
<input type="checkbox"/> Fatigue	<input type="checkbox"/> Inadequate engineering or design
<input type="checkbox"/> Lack of knowledge and/or skill	<input type="checkbox"/> Inadequate hazard assessment
<input type="checkbox"/> Physical stress or capability	<input type="checkbox"/> Inadequate personnel to complete task
<input type="checkbox"/> Rushing or inattention	<input type="checkbox"/> Inadequate tools/equipment/materials
<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Inadequate training and/or familiarization
	<input type="checkbox"/> Inadequate work standard/procedure
	<input type="checkbox"/> Lack of enforcement of procedure or supervision
	<input type="checkbox"/> Standards/procedures not developed
	<input type="checkbox"/> Wear and tear
	<input checked="" type="checkbox"/> Other (Specify)
	Ship characteristics combined with weather.

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

See attached excerpt from "CCGS Bartlett Maneuverability Discussion"

- Large sail area aft resulting in an "unbalanced" design affected by minimal cross-winds.
- The impact of having a significant sail area fully aft in conditions other than the wind directly ahead results in the transfer of the pivot point of the vessel forward thus producing a larger than expected lever effect.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Mike McCullagh CO	250-882-3864	Christopher Couch Ch/O	250-413-2800
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Matthew Jackson CE	250-882-1273	Joseph Van Der Sande 3rd/O	250-413-2800

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
Abatement contractor clean up of possibly asbestos containing debris. Encapsulation of exposed asbestos in bulkhead lining panels.	1,500\$

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Asbestos: Space secured against entry and signs posted. Abatement contractor to be contacted (on the next business day) to clean up debris and encapsulate the exposed asbestos.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer / Marine Engineering	2018-01-30	

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson

Digitally signed by Matt Jackson
DN: cn=Matt Jackson, ou=Coast Guard, ou=Coast Guard,
email=BartlettCE@ccgs-ngcc.gc.ca, c=CA
Date: 2018.01.28 16:48:16 -0800

Title	Chief Engineer	Date (YYYY-MM-DD)	2018-01-28
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Email address BartlettCE@ccgs-ngcc.gc.ca

Investigators comments

Quick action was taken to restrict access to a possibly contaminated space after discovery of the damaged bulkhead lining panels. Plan for clean up and encapsulation in place.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Chris Couch	250.423.2800	Chris Couch <small>Digitally signed by Chris Couch DN: cn=Chris Couch, o=Canadian Coast Guard, ou=CCGS Bartlett, email=BartlettCHO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 16:51:00 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Chief Officer	BartlettCHO@ccgs-ngcc.gc.ca	2018-01-28

Workplace OHS Committee Member/Health and Safety Representative comments

I confirm that the laundry room has been secured to prevent entry by crew members.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 17:25:22 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-01-28

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

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INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|--|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) <input type="text"/> | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett																									
Date of Report (YYYY-MM-DD) 2018-02-12	Mailing Address 25 Huron Street, Victoria BC V8V 4V9																										
Name of Responsible Supervisor Captain Mike McCullagh		Supervisor's Telephone # 250.213.3685																									
Organization (Select One) <input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)																											
Regional Directorate (Select One) <input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs																											
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<input type="checkbox"/> ILS																											

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <input type="text"/>	Given Name <input type="text"/>	Initial(s) <input type="text"/>	Age <input type="text"/>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title <input type="text"/>	Years of experience in current position <input type="text"/>
Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor <input type="checkbox"/> Other (Specify) <input type="text"/>			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Juan de Fuca Strait - WCVI Transiting North

Date of Incident (YYYY-MM-DD)

2018-01-31

Time of Incident (Local)

15:39

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Unknown dust identified as containing Asbestos

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

January 31, 2018 - 1539 Results received from dust samples taken during Wheelhouse Console ACM Wiring Insulation IIR. Test results from the consoles fell in the high range compared with expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (iATL). In consultation with the RD Fleet, the vessel turned around and returned to Victoria and was secured @ 2350. Additionally results from dust samples taken in the Laundry Room after the cracked ACM bulkhead IIR clean-up fell in the moderate range compared with "experience standards".

February 1, 2018 - 0800 Northwest Environmental Group Limited (NWE) and Canadian HAZ-MAT were contacted to attend the vessel to develop a sampling/testing and remediation plan. NWE provided third party oversight of the remediation work and performed the visual and air clearance inspection and documentation. Bulk samples taken from wiring in MCR console due to similar morphology wiring which tested positive in the Wheelhouse. Sample results returned positive for 30% Chrysotile asbestos. Roll of packing in MCR STBD stores tested positive for 30% Chrysotile asbestos.

February 2, 2018 - 1000 NWE on-board to implement Background Asbestos Testing. Background testing was conducted to look for evidence of the spread of asbestos contamination. The test consists of surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether the fibres have been rendered airborne. 1630 the first set of results for the low volume air sampling were received and verbally conveyed by NWE, the results were below the level of detection 0.01f/ml. 1900 sample results conveyed by NWE from the longer running high volume pumps were also below the level of detection 0.01f/ml. NWE developed the Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments. Compartments or spaces included: Wheelhouse including consoles, Void Space below Wheelhouse due to open wire transits to Wheelhouse consoles, Laundry Room, MCR Console and MCR Stbd Stores.

February 3, 2018 - NWE returned to perform long duration (10 hours) sampling in the same locations. The sample volume must be greater than 1425 liters to qualify the results to prove the air meets the Air Clearance/Permissible Exposure Limit for continuous occupation of 0.01f/ml. Results received and some samples were above the limit of detection but below the limit of quantitation. NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are below WorksafeBC exposure limits"

Dust samples to couriered by NWE to iATL February 5, 2018 with quick turn around time of samples of 6 hours ordered. Hold up clearing customs at the border required re-sampling on Feb 8, 2018.

February 4, 2018 - Canadian Haz-mat began work cleaning Wheelhouse consoles with oversight provided by NWE.

February 5, 2018 - Canadian Haz-mat finished work in the Wheelhouse and started and finished work in the Laundry Room. Both spaces passed visual inspection by NWE.

February 6, 2018 - Canadian Haz-mat on-board removing thermocouple extension wire from ER and MCR console. MCR console cleaning started and completed. All unidentifiable packing disposed of through Canadian Hazmat. Stbd MCR cleaning started and completed. NWE air clearance samples from Wheelhouse and Laundry Room passed.

February 7, 2018 - Canadian Haz-mat on-board setup and performing cleaning in Bridge Void Space. Stbd MCR, ER, and MCR passed visuals inspection by NWE. NWE air clearance sampling from MCR and Stbd MCR taken and passed.

February 8, 2018 - Canadian Haz-mat onboard completed cleaning in Bridge Void Space. Space passed visual inspection by NWE. NWE air clearance sample from Bridge Void Space passed. Dust wipe samples retook in ER, MCR, and HVAC as the initial samples were still held up at customs.

February 9, 2018 - NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE: "We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits."

Dust sample results received: HVAC return and 3 of 4 samples from ER returned low or none detected. MCR console sample returned "moderate", this was directly below the ACM wire removals. The area was wet wiped after the sample taken. MCR passed air and visual clearance by NWE. As per NWE recommendation, console top was HEPA vacuumed. One sample taken from ER in an inaccessible place returned "elevated". Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: " Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer."

Follow up sampling to be conducted upon return to Victoria. Defect entered.

Reports attached:

-iATL dust wipe samples results

-NWE air sample test results alongside

-NWE Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments

-NWE Asbestos Air and Visual Clearance Documents for effected spaces

-NWE air sample test results while underway at sea conditions

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☒ Yes ☐ No

Specify

A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire insulation on the bridge. Restricting access and sampling the dust was the course of action upon receiving the wire insulation results. Void space, MCR console, MCR Stbd Stores and Laundry Room access was restricted upon receiving the results on asbestos-containing materials found.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?

☐ Yes ☒ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions	Substandard Conditions
<input type="checkbox"/> Bypassing safety devices	<input type="checkbox"/> Congested or restricted area
<input type="checkbox"/> Failure to check or monitor	<input type="checkbox"/> Defective tools, equipment or materials
<input type="checkbox"/> Failure to communicate/coordinate	<input type="checkbox"/> Excessive noise
<input type="checkbox"/> Failure to follow procedure/policy	<input type="checkbox"/> Heat/cold exposure
<input checked="" type="checkbox"/> Failure to identify hazard/risk	<input type="checkbox"/> Inadequate/improper PPE or use of PPE
<input type="checkbox"/> Failure to react/correct	<input type="checkbox"/> Inadequate communication
<input type="checkbox"/> Failure to service equipment properly	<input type="checkbox"/> Inadequate guards or barriers
<input type="checkbox"/> Failure to use PPE	<input type="checkbox"/> Inadequate information/data
<input type="checkbox"/> Failure to warn or secure	<input type="checkbox"/> Inadequate instruction/procedure
<input type="checkbox"/> Horseplay	<input type="checkbox"/> Inadequate preparation/planning
<input type="checkbox"/> Improper lifting	<input type="checkbox"/> Inadequate support/assistance
<input type="checkbox"/> Improper loading, placing, mixing	<input type="checkbox"/> Inadequate ventilation
<input type="checkbox"/> Improper position/posture for task	<input type="checkbox"/> Inadequate warning system
<input type="checkbox"/> Operating at improper speed	<input type="checkbox"/> Lack of tools, equipment or materials
<input type="checkbox"/> Using defective equipment	<input type="checkbox"/> Poor housekeeping
<input type="checkbox"/> Using equipment improperly	<input checked="" type="checkbox"/> Presence of harmful materials
<input type="checkbox"/> Other action (Specify)	<input type="checkbox"/> Radiation exposure
	<input type="checkbox"/> Uneven ground/terrain
	<input type="checkbox"/> Weather or environmental conditions
	<input type="checkbox"/> Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Dust inside wheelhouse consoles contains asbestos. Additional wires of the same morphology as the ACM wires on the bridge found in the MCR console. NWE suspects the source of the dust is from pulling asbestos containing cabling throughout the years.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors

- ☐ Emotional stress
☐ Fatigue
☐ Lack of knowledge and/or skill
☐ Physical stress or capability
☐ Rushing or inattention
☐ Other (Specify)

Job Factors

- ☐ Abuse or misuse of equipment
☐ Inadequate engineering or design
☒ Inadequate hazard assessment
☐ Inadequate personnel to complete task
☐ Inadequate tools/equipment/materials
☐ Inadequate training and/or familiarization
☐ Inadequate work standard/procedure
☐ Lack of enforcement of procedure or supervision
☐ Standards/procedures not developed
☐ Wear and tear
☐ Other (Specify)

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

Incomplete identification and abatement of asbestos on-board. Depth and scope of previous Asbestos Surveys did not identify the wiring in these consoles.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson CE	250-882-1273	Steve Buss SE	250-213-3685
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Mike McCullagh CO	250-882-3864		

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
<input type="text"/>	<input type="text"/>

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Future Asbestos Management Surveys to include on-board air sampling and dust wipe samples.
 As per NWE recommendation future work inside Wheelhouse and MCR consoles and Wheelhouse Void to be considered asbestos work due difficulty of removing all the dust for the wiring, terminal strips, circuit boards/components, cloth wrap on wiring and bronze braid on the electrical cables.
 Work outside of normally accessed spaces/equipment may encounter the possibility of asbestos debris and be considered in the risk assessment prior to starting work.
 Vessel Specific Asbestos Management plan and labels updated to cover findings during the investigation.
 Upon return to Victoria additional dust sampling to be conducted in the ER/AMS as per NWE recommendations.
 Training arranged for 5 crew members for Asbestos Awareness and Abatement on February 22/23.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Marine Engineering	<input type="text"/>	<input type="text"/>

K. Investigation Completed By (Required)

Name of person investigating Matthew Jackson	Telephone # 250-882-1273	Signature Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, o=Canadian Coast Guard, ou=Coast Guard email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.13 08:37:47 -0800</small>
Title Chief Engineer	Date (YYYY-MM-DD) 13/2/2017	
Email address BartlettCE@ccgs-ngcc.gc.ca		

Investigators comments

Depending on the anticipated service life of the Bartlett, consideration should be given for a thorough abatement plan to be developed.

Future Asbestos Management Surveys to include regular air and dust sampling.

Bulk sampling frequency and scope to be increased to further identify/clear areas on-board of ACM.

At sea air sampling plan was developed with NWE, and performed to ensure air quality while at sea prior to returning the vessel to operational status.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name Steve Buss	Telephone # 250-213-3685	Signature Steve Buss <small>Digitally signed by Steve Buss DN: cn=Steve Buss, o=Canadian Coast Guard, ou=DFO email=BartlettSE@ccgs-ngcc.gc.ca, c=CA Date: 2018.02.13 08:45:05 -0800</small>
Title Senior Engineer	Email address BartlettSE@ccgs-ngcc.gc.ca	Date (YYYY-MM-DD) 2018-02-13

Workplace OHS Committee Member/Health and Safety Representative comments

Investigation performed to complete satisfaction of the Workplace OHS Committee Member. A well thought out plan has been developed for future testing to ensure the health and safety of all crew members in the future.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager Michael McCullagh	Telephone # 250-882-3864	Signature Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet ou=CCGS Bartlett, email=BartlettCO@bar.ccg-ngcc.gc.ca, c=CA Date: 2018.02.13 08:15:53 -0800</small>
Title Commanding Officer	Email address BartlettCO@ccgs-ngcc.gc.ca	Date (YYYY-MM-DD) 2018-02-13

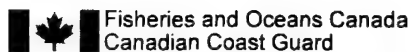
Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Concur with corrective and preventative measures adopted, and the heightened awareness and vigilance with regard to ACM containing work spaces.

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and



the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at:
DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|--|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) <input type="text"/> | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett																									
Date of Report (YYYY-MM-DD) 2018-01-28	Mailing Address 25 Huron Street Victoria BC V8V 4V9																										
Name of Responsible Supervisor Matthew Jackson		Supervisor's Telephone # 250-882-1273																									
Organization (Select One) <input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)																											
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C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname <input type="text"/>	Given Name <input type="text"/>	Initial(s) <input type="text"/>	Age <input type="text"/>
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male	Job Title <input type="text"/>		Years of experience in current position <input type="text"/>
Employment Status <input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor <input type="checkbox"/> Other (Specify) <input type="text"/>			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Alongside Victoria Coast Guard Base Refit Period

Date of Incident (YYYY-MM-DD)

2018-01-24

Time of Incident (Local)

1600

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☐ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

January 22, 2018 - Electrical wire and insulation samples were taken from Wheelhouse Fire Detection Panel Console and Starboard Control Console to be tested for asbestos.

January 24, 2018 - Asbestos test results received, two of the seven samples wire samples returned positive for Chrysotile Asbestos (70%). The insulation tested positive while the wire wrap (jacket) tested negative. See attached pdf of test results. Recommendation from Northwest Environmental was to restrict access to location and consider any dust inside the console to be asbestos containing until samples were tested.

January 26, 2018 - Northwest Environmental returned to take dust samples from the two consoles. Discussing the wire insulation test results with the Project Manager from Northwest Environmental, the negative result of asbestos in the wire wrap is a good indication the dust may not contain asbestos, as chaffing wire wraps which contain asbestos due to vibration would be the greatest concern in the shedding asbestos fibers. Visual inspection of asbestos-containing wiring during dust sampling shows wire wrap in good overall condition. Samples couriered to a laboratory in New Jersey for analysis with a rush order (6-hour turnaround) requested on test results. Results expected January 30, 2018.

See attached photo of the wiring taken during dust sampling. Note the black wires not connected in the foreground and in the top wires in the bottom terminal strip are the wires which test result show contain asbestos insulation under the black wire wrap.

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☐ Yes ☐ No

Specify

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☐ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☐ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☐ Other action (Specify)

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Use of wiring containing asbestos insulation during vessel construction. The asbestos insulated wire makes up part of the wiring in this console, other wires are rubber insulated with a cloth wrap or PVC insulated. The wiring in the Bridge consoles was not identified in the Asbestos Management Plan.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress <input type="checkbox"/> Fatigue <input type="checkbox"/> Lack of knowledge and/or skill <input type="checkbox"/> Physical stress or capability <input type="checkbox"/> Rushing or inattention <input type="checkbox"/> Other (Specify) <div style="border: 1px solid black; height: 20px; width: 400px; margin-top: 5px;"></div>	<input type="checkbox"/> Abuse or misuse of equipment <input type="checkbox"/> Inadequate engineering or design <input type="checkbox"/> Inadequate hazard assessment <input type="checkbox"/> Inadequate personnel to complete task <input type="checkbox"/> Inadequate tools/equipment/materials <input type="checkbox"/> Inadequate training and/or familiarization <input type="checkbox"/> Inadequate work standard/procedure <input type="checkbox"/> Lack of enforcement of procedure or supervision <input type="checkbox"/> Standards/procedures not developed <input type="checkbox"/> Wear and tear <input checked="" type="checkbox"/> Other (Specify) <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">Incomplete identification and abatement of hazardous materials onboard</div>

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.
 Electrical insulation on wires installed outside of high heat location had been overlooked in previous Asbestos Management Surveys. Asbestos-containing wiring connects via terminal strips to rubber insulated cloth wrapped wires which are part of rubber jacketed bronze armored cables. Unable to investigate the consoles further until test results are received.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson C/E	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Steve Buss S/E	250-882-1273		

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Currently awaiting test results of dust from consoles.
 Plan for abatement of dust and wiring to be determined based on results. Results expected January 30, 2018.
 Extensive work on the bridge consoles would be required if wiring is to be replaced.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Vessel Maintenance Manager	ASAP	

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, o=Coast Guard, ou=Coast Guard email=BartlettCE@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.27 10:32:32 -0800</small>
Title	Date (YYYY-MM-DD)	
Chief Engineer	2018-01-27	
Email address	BartlettCE@ccgs-ngcc.gc.ca	

Investigators comments

Surprising positive test result for asbestos in an application that would not benefit from the once thought of advantages of using this mineral. Wire and wire wrap (jacket) look to be in good condition. Awaiting test results of the surrounding dust to make decision on course of action.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Chris Couch	250.213.3685	Chris Couch <small>Digitally signed by Chris Couch DN: cn=Chris Couch, o=Canadian Coast Guard, ou=CCGS Bartlett email=BartlettCHO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 10:04:56 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Chief Officer	BartlettCHO@ccgs-ngcc.gc.ca	2018-01-28

Workplace OHS Committee Member/Health and Safety Representative comments

During this patrol's OHS Meeting, we will review the Safety Manual - Asbestos Containing Materials (7.A.10) to remind everyone of asbestos containing materials (ACM). We will also review the ship's Asbestos Management Plan (AMP). Concur with this report, and nothing further to add.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Michael McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, o=Canadian Coast Guard Fleet ou=CCGS Bartlett, email=BartlettCO@ccgs-ngcc.gc.ca, c=CA Date: 2018.01.28 10:08:41 -0800</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca	2018-01-28

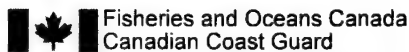
Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

Asbestos Management plan updated to reflect ACM in bridge consuls.
Concur with proposed Corrective & Preventative Measures.

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and



the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: March-10-18 8:16 AM
To: 'George Kohorst'
Cc: CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin Gabriel
Subject: RE: Bartlett - Deutch Connector Crimp Tool & Connector Kit

Good Morning George,

Could you please bill us for these tools.

PS: Are you guys considering having any of your workers taking an asbestos awareness & abatement training in preparation for May-June Refit? Gabe is involved in arranging some training for the CG Electronics staff, and considering that you do so much work for us, he may pay to train your workers (2 days duration).

Many thanks ☺

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: George Kohorst [mailto:kohoconsulting@shaw.ca]
Sent: February-26-18 6:52 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: Chaikin Gabriel
Subject: Re: Bartlett - Deutch Connector Crimp Tool & Connector Kit

Good Morning Ross

Great timing on the Deutsch connector kit. The last parts I was waiting for came last week and I had just finished putting the kit together yesterday probably about ten minutes before your email. It includes 2,3,4, and 6 pin sets, both sized contacts, and the crimpers. I will be out at IOS today and will bring it with me. I can drop it off to be shipped to the Bartlett. I am still waiting for the CAT5E connectors to come in.

I will be in touch as soon as I get the CAT 5 ends and make arrangements then. I still have to put together the invoice so may be a few days before I send it out for the connector kit.

I hope that your cook made his flight OK. By chance I was at the gate when he was looking for a ride.

Be in touch soon
George Kohorst
250 881-2901
kohoconsulting@shaw.ca



On Feb 25, 2018, at 12:33 PM, CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca> wrote:

Good Day George,

1. I've been led to believe that you supplied us with a Deutch Connector Crimping Tool last month. Did we pay you for that?
2. Are you willing & able to put together an assortment of Deutch connectors for us?
3. Following up on the asbestos sampling we did at the end of the Refit, we found asbestos dust & asbestos wiring in bridge & MCR consoles. So you may want to consult North West Environmental regarding training on how to deal with that in the future, and/or you may want to talk to Gabe (*taking over from Cody) regarding getting on the next Coast Guard Asbestos Awareness & Abatement Training.

Regards,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccgsc-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: March 12, 2018 9:39 AM
To: CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; Chaikin Gabriel; McMillan Cody
Subject: FW: ACM Electronic Consoles in Wheelhouse & Engine room

Capt.

Well that answers that question. Any & all future work done in the W/H & ER consoles (where ACM was discovered last month) shall always be require Moderate-Risk Asbestos Abatement procedures to be used, and all workers must be trained in abatement procedures – unless the consoles get fully rewired, (massive jobs & massive expense).

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: March-12-18 8:25 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: Joel Shandro; Grant Rogers; Julie Scott-Moncrieff
Subject: RE: ACM Electronic Consoles in Wheelhouse & Engine room

Hi Ross, please see our responses in black below. I hope this provides some clarity. Please let me know if you need anything else.

Best,

[REDACTED]
Project Manager
North West Environmental Group Ltd.

Cell: [REDACTED] (primary)
Office: 250-384-9695 ext [REDACTED]
201 – 415 Gorge Road East Victoria, BC V8T 2W1

From: CCGS-NGCC, Bartlett Chief Engineer [<mailto:BartlettCE@ccgs-ngcc.gc.ca>]
Sent: March 8, 2018 6:41 PM
To: [REDACTED]
Cc: CCGS-NGCC, Bartlett Captain <BartlettCO@ccgs-ngcc.gc.ca>; Chaikin Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Senior Engineer <BartlettSE@ccgs-ngcc.gc.ca>; Wallace Dustin <Dustin.Wallace@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Chief Officer <BartlettCHO@ccgs-ngcc.gc.ca>
Subject: ACM Electronic Consoles in Wheelhouse & Engine room
Importance: High

Good Day [REDACTED],

For the purpose of being clear on how the Bartlett performs electrical and electronic maintenance & servicing in the Wheelhouse and the Engineer room from now on, please confirm my understanding of the following paragraph from the attached 10 Feb 2018 report:

"NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker (de?) contamination must be used."

Additionally, I'm reasonably sure that I read another document that indicated that air sampling was required when work was conducted in any of the electronic consoles where asbestos was recently identified. And I'm quite sure that means that access to the area would be restricted to haz-mat personnel until an air Clearance Document has been received. Are these your recommendations? [NWest] We have provided an air clearance document for the Wheelhouse (sent to Matt, we can resend if required). Any further work by any worker in the consoles would have to be done following moderate risk procedures (half-face mask, HEPA vacuum, drop sheets, barrier tape, suit, asbestos training etc.). Additional air clearance, ambient, or occupational sampling would not be required as we found the result of these samples collected during abatement (directly impacting the dust) to be within regulatory limits. The use of compressed air is not permitted.

And I think that in accordance with WorkSafeBC regulations, any contractors working within any of the electronic consoles where ACMs have been detected must be professionally trained in the proper handling & abatement of ACMs (or perhaps just work under the guidance of a Hazardous Materials consultant such as yourself). [NWest] See comment above.

Ideally we would like to seal up these consoles that are known to contain asbestos dust, but the console vents in most cases are required for cooling the electronics. [NWest] This is a valid concern. The majority of loosely adhered dust was removed, however, not all areas were accessible without removing cables, and cables themselves were not pulled apart from each other to remove dust caught between them. The likelihood of fibres becoming airborne from the remaining dust is low, however, it does exist.

1. What do you think about performing an aggressive clean up job in the consoles, such as negative pressure venting and using compressed air to stir up & blow out all remaining ACM dust from consoles? [NWest] We don't recommend the cleaning described in the last statement for three reasons:
 - a. Pressurized air is not permitted by WorkSafeBC as a method of removing asbestos-containing materials.
 - b. The abatement contractor removed the majority of loosely adhered dusts so there is little risk of remaining dust becoming airborne to a concentration above WorkSafe limits (note: this is not a zero risk).
 - c. Unless the CCG are doing a lot of work in the consoles, the abatement cost of going after all the dust may not be a priority (obviously, this is the decision of the CCG). Depending on upcoming refit work, it may be better to do a full abatement when/if the consoles will be stripped of cables and other interference items.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett

Cell: [REDACTED]
BartlettCE@bar.ccg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: March-02-18 3:21 PM
To: [REDACTED]
Subject: RE: ACM Reporting Re: Parameters, Limits, Thresholds, and Questions

Hi [REDACTED]

Oh yes, of course. Sorry for making an inquiry on Friday afternoon, (I'm in the habit of dealing with issues as they arise, and it gives the other cc'd parties some data to consider). Hopefully you need not give this inquiry any thought over the weekend, and feel free to discuss or cc the inquiry with anyone else that you think should be in the loop.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: March-02-18 2:39 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: Joel Shandro; Julie Scott-Moncrieff
Subject: RE: ACM Reporting Re: Parameters, Limits, Thresholds, and Questions

Hi Ross, we will review and respond. Is a response by Wednesday next week okay?
Best,

[REDACTED]
North West Environmental Group Ltd.

Cell: [REDACTED] (primary)
Office: 250-384-9695 ext [REDACTED]
201 - 415 Gorge Road East Victoria, BC V8T 2W1

From: CCGS-NGCC, Bartlett Chief Engineer [<mailto:BartlettCE@ccgs-ngcc.gc.ca>]
Sent: March 2, 2018 2:25 PM
To: [REDACTED]
Cc: Chaikin Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Captain <BartlettCO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Senior Engineer <BartlettSE@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Logistics Officer <BartlettLO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Chief Officer <BartlettCHO@ccgs-ngcc.gc.ca>
Subject: ACM Reporting Re: Parameters, Limits, Thresholds, and Questions
Importance: High

Good Day [REDACTED]

Please consider responding to the attached document in terms of:

- Correcting or refining my understanding where mistaken, and
- Addressing the questions to extent possible.

The report data is extensive, and I'd like to ensure that I am interpreting it correctly.

In light of the recent findings & abatement processes, I expect that future testing will include the following: although I've not yet discussed the details with the Captain, or the DPA - Designated (Safety) person Ashore.

- Dust sampling above deckhead panels, particularly in accommodation (and air sampling in Supply Officer's Office → where above deckhead space is open to the office).
- Dust sampling above wireways, both above deckhead panels and open wireways in Engine Room and throughout the ship.
- Electronics / Radio Room
- More testing while underway in rough water conditions in work spaces and cabins, for 12 hour durations, in particular aft Oilers cabin & Supply Officers cabins, and in "Upper Deck" spaces where less of the ACM bulkhead panels have been removed → more vibration & ship flexing → ACM bulkheads chafing-rubbing.

Please also note that we expect that this is billable time.

Many Thanks ☺

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccg-s-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: March-21-18 10:15 AM
To: [REDACTED]
Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Engineer
Subject: CCGS Bartlett - ACM Testing Follow-up

Follow Up Flag: FollowUp
Flag Status: Flagged

Good Day [REDACTED]

Re: Following Up with ACM testing.

Scott Ware will be working as Chief Engineer on Bartlett for next 4 weeks as of noon today. (And the ship is in Port Hardy.) [REDACTED]

He may want to follow up with some additional ACM sampling when the Bartlett gets into IOS, Pat Bay, Sidney in 2 weeks' time. We were thinking of starting with redoing dust swipes in wheelhouse fire panel console and MCR console, (to confirm that recent abatement was somewhat successful), as well as some air sampling adjacent to fire panel wheelhouse console vent louvers.

We were also hoping to get some air monitoring-testing machines from Gabe Chaikin to perform some more extensive testing at sea. Do you think that we'd need any amount of training with the machines in order to take reliable samples? Same for dust swipes – Can we get dust swipe kits? And for regular ACM sampling, after we'd had the training, presumably can we just use regular zip lock baggies appropriately labelled.

There are a number of other areas we like to perform dust swipes, including above deckhead (ceiling) panels, the Radio / Electronics Room and the Gym for starters.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

**Pages 887 to / à 888
are duplicates of
sont des duplicatas des
pages 922 to / à 923**

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: [REDACTED]
Sent: March-28-18 3:31 PM
To: Chaikin Gabriel
Cc: [REDACTED]
Subject: Bartlett Telecon Summary and Notes - March 28
Attachments: CCGS Bartlett - ACM Testing Follow-up

Hi Gabriel, a summary and additional notes from today's telecon with the Bartlett Captain and Engineers.

1. Training:
 - a. I'll follow up with [REDACTED] regarding any potentially outstanding certificates for recently trained crew.
 - b. We can provide the following training: asbestos awareness, asbestos abatement, lead and silica awareness, respirator use and maintenance. Your site or our office.
 - c. I recommend that a few crew members from each shift/rotation have abatement training.
 - d. We can provide safe work procedures for consoles and other work impacting asbestos containing materials (ACM).
 - e. We can provide air sampling training.
 - f. Your Exposure Control Plan/Asbestos Management may need updating to include recent findings. We have updated the Asbestos Management Plan for the Dumit and Eckaloo in the past.
2. Consoles:
 - a. If cables are coated with an elastomeric coating, there will still be asbestos fibres in latent dust on inaccessible surfaces within the consoles, however, coating should help to reduce the amount of new fibres being released due to handling.
 - b. If a spray encapsulant is used, the space should be placed under negative pressure as it may cause a release of fibres. Spray must not be pointed at dusty surfaces and cables should be vacuumed first to remove loose material.
 - c. Cables are old – there may be issues with excessive handling/encapsulation.
 - d. Any console work will be moderate risk. Depending on the work activities, additional controls may be required (e.g. mini enclosure under negative pressure).
3. Additional wipe and air sampling (per Ross' email, attached)
 - a. Since the consoles were not fully abated and there is still ACM present, I don't see the benefit in collecting surface wipe samples, as they will likely show asbestos present, which is expected.
 - b. Unless there has been some work or damage to the vessel, I don't see the need for additional air sampling at this time. The Captain confirmed no such work or damage.
4. Pumps:
 - a. We would be happy to do a review of the pumps you are looking at purchasing to ensure they would meet sampling needs (e.g. able to achieve flow rates suitable for TEM testing).
 - b. We can also provide calibration services for rotameters, provide sampling media, or whole pump packages (i.e. procurement, maintenance, calibration, storage). Let me know if you're interested.

The vessel will be in Victoria April 9-11. No sampling has been requested at this time.

Please let me know if you have any questions.

Best,



[REDACTED]
Project Manager
North West Environmental Group Ltd.

C. [REDACTED]
P. 250-384-9695 ext. [REDACTED] | F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC , V8T 2W1

This message may contain privileged information which is prohibited from disclosure and intended for the named recipient(s) only. If received in error, please contact the sender at North West Environmental immediately and destroy the message and any attachments, copies or printouts.

No information has been removed or severed from this page

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: April 20, 2018 12:35 PM
To: McMillan Cody; Chaikin Gabriel
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: FW: Refit Potential ACM Projects - Notifier Fire Panel Relocation
Attachments: 2018 - May-June SR Worklist Ver.5_RM - ACM Pre-Work Materials Hazardous Assessment required.doc

Importance: High

Cody & Gabe,

One job in particular that I should have mentioned is the "Relocation" of the Bridge Notifier Fire Panel:

██████ has asked United Engineering to fabricate an insert for the wheelhouse console. After Viking approves on fitting of the insert into the console (which is technically a CCR – my concern is that it will not permit sufficient cooling air flow), then it will involve medium risk asbestos work to remove the fire panel, install the insert, and reinstall the fire panel. ██████ has offered to do this work. I expect that KOHO George will be OK with this job also, but I expect that Viking will not even want to be involved with the annual fire detection system inspection if it involves asbestos work. This relocation of Fire Panel will be required before we can schedule the annual inspection.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: ██████
BartlettCE@bar.ccgsgncc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: April-20-18 11:30 AM
To: McMillan Cody; Chaikin Gabriel
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer
Subject: FW: Refit Potential ACM Projects
Importance: High

Hi Cody & Gabe,

2 points regarding asbestos in upcoming refit;

1. I think that we should be giving NWest asbestos consultant ██████ the heads up that we will be requiring her services for the upcoming Refit. There are many intricacies with Medium to High Risk asbestos work that we are not used to dealing with, starting with Notice of Project, and ending with Clearance documentation. The requirements & procedures for air sampling is the biggest grey area, and I expect that extensive training is required to have this subject cased. But as I previously stated, we will eventually come up against the LDV limit for this work, and that will be a problem.

2. There are many jobs that will require pre-sampling for Refit, and I will document these in a near future correspondence. I've not read the PSPC Spec in detail, but I suspect that contractor has been given reasonable warning that ACM could be encountered under diverse condition, including the breaker panels during Megger Survey.

Over the next few days I will complete list of other contracts that I think we should be setting up.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

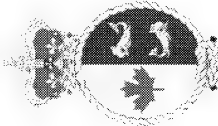
From: CCGS-NGCC, Bartlett Chief Engineer
Sent: March-01-18 1:33 PM
To: McMillan Cody
Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer
Subject: Refit Potential ACM Projects

Hi Cody,

You've probably already got you own list, but I thought I'd just forward a list of jobs where we may benefit from Pre-Work Hazardous Materials Assessment prior to Refit if possible.
Of course it is more likely that the required equipment will have to be opened up in the days leading up to refit or on the first several days.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

	CCGS BARTLETT		SELF REFIT	WORK LIST	DRAFT – VER.5
			LOCATION:	VICTORIA COAST GUARD BASE	
			WORK PERIOD START	2018-MAY-16	
			WORK PERIOD END	2018-JUNE-27	
Status	<i>Funding source</i>	Report Comments : This draft is a cleaned up version of cut & paste job from previous Refits.			
		Regulatory – Annual unless otherwise noted			
		No.	Description	Resource	Comments
Planned	Refit	R-13	Annual Test of Fire Detection Panel -note main Fire Detection control panel is located inside the console which contains Asbestos wiring. Despite abatement efforts NWE precautions in Clearance documents to be followed during testing. -ask Viking on work required to relocate this panel outside of the console. -magnetic hold-back in the MCR is wired with a flyback diode. Without this diode when the manual close button on the hold-back is pressed it resets the MCR secondary fire detection display panel. It has caused errors on the main Bridge panel displaying fault LCD80. An alternate 24VDC should be looked into. -hold back in focl'sle replace with 120VAC and test.	Viking	
Planned	Refit	R-22	3EE010 Electrical System Insulation Test - Megger Survey *** Shall include Terminal Tightness checks on all opened / accessed equipment as an application of CCG Tech Bulletin 2016-13 Electrical Termination Maintenance. See 12/04/2017 Edward email.***	Contract / Fleet Electrician	
Planned	Refit	R-28	Asbestos Management Plan Risk Assessment Re-Survey and HEPA Vacuum Rectification Samples/Areas for Asbestos Testing:	Marine Engineering-NorthWest Environment	Samples to be taken and tested ASAP to ensure sufficient time if abatement is required.

			al	
			<ul style="list-style-type: none"> -ER ventilation (cloth covering over fibreglass insulation) -Electrical wiring samples -MCC grey connection wire from cells to terminal strips at top of MCC -Windlass MG Set/Windlass -Windlass Drum Starter controls -Dust samples based on any positive results. Continue dust sampling to include additional spaces. Air Sampling? Thorough inspection of all cabins and workspaces with ACM bulkheads to look for damage/unencapsulated joints and seams. Repeat Locations from last reports: 	

			Engineering		Resource	Comments
		No.	Description			
	Refit	E-25	Main Seawater Piping -continue replacement of SS piping within LDV contract.		United	Older Piping gaskets ACM?
	Refit	E-31	ER Ventilation Ducting Cleaning / Inspection / Replacement -at minimum have ducts cleaned professionally. -inspect, measure, and identify the worst section for replacement -replace ducting... JB sheet metal used for duct replacement on the Reid with good results. -Mostly corrosion and dirt. Vibration can loosen and blow out into ER at face level.		Contract / www.Superste amteam.ca	
		E-32	Accommodation HVAC Ducting Cleaning & Inspection Ask for before & after photos Get mold testing performed before cleaning by NEW, (ensure than Air Cond in use the week prior to test → condensation). R.M. (large quantities of water are known to be distributed throughout ducting when A/C is on – melted evaporator frost)		Contract	OHS: Ship's Crew concerned about dirt in ducting. (I think we should be testing for mold also – considering extent of ducting moisture from A/C. RM.) Should not remove deckhead panels without ACM precautions.
Planned	Refit	E-37	Stbd MCR Stores Deck Coating Repair. -Stbd MCR Stores deck coating in poor condition (rust and scale). To be descaled, prepped and painted.			

In Progress	Refit	E-38	<p>ACM – Asbestos Work Refer to CE H/O 17-04 12-07-2017 Notes</p> <p>Two pipes in the AMS have been identified as possibly containing ACM. One is an unused pipe penetration above the work bench. The other passes transversely below the deck plates just aft of the AMS/ER bulkhead. Both have white/crumby insulation beneath the lagging cloth. The pipe penetration has been sealed with poly and tape as it is above the work bench and a possible source of contamination if disturbed. The pipe in the bilge has mostly been encapsulated with the Interbond 998 paintjob in DD. Both should be removed in the next SR period or in Training Week.</p> <p>Other ACM Work: Upper Deck Trunking above sewage Plant, fwd of steps to Galley.</p>	Contract	<p>And NWE to do "Pre-Work Assessment" and the "Clearance Document", (being that they are always updating our Annual ACM Survey / Insulation Report.)</p> <p>LGF Recommended as local ACM removal experts. RM.</p>
Planned	Refit	E-44	<p>Fire Station Valve Maintenance -MAINTelligence PM for 5 year valve maintenance</p>	At Sea	<p>Purchase new valve(s) and do maintenance while operational. We could also disconnect hose and pressurize fire main → if no leaks then valves are fine → no lapping necessary. RM.</p> <p>Quote for new 2" and 2 ½" valves received from Wolseley Industrial Canada Inc. via email 03/01/2018 no order made yet. RNM</p> <p>Gaskets ACM?</p>
Planned	Refit	E-45	<p>Windlass Band Brake Inspection -remove and inspect brake bands. -inspection to include: brake lining, pins, band eyes, threaded actuation rod and nut. -Std brake lining worn according to United Engineering. One spare brake lining set onboard. Sample taken and will be delivered to NWE CC Feb 21, 2018 to ensure the spare lining is not asbestos containing.</p>	Contract	
In Progress	Refit	E-46	<p>Windlass Inspection Perform Survey Work Remove and inspect bearings. We suspect the bearings to have excessive clearance, we need to check the housing for out of round and also check the shaft dimensions and the shaft for out of round.</p>	United Engineering	<p>Inspection of bushings, bearings caps, shaft and gears, so that we know to what extent we're going to overhaul the windlass in the May-June Refit is underway. RNM</p>



Government of Canada
Gouvernement du Canada

A.G. Lowe
EMF



J. COULTIS
CHIEF ENGINEER, ACTING
CCGS BARTLETT



MEMORANDUM

SEP 14 1990
BY RMPB

Transformers, Coast Guard Vessels

Please find a list of the following transformers
CGCS Bartlett, etc. as shown below
as requested on 10/10/90

1. HEATING DISTRIBUTION: Marcus Transformer
(3) 25KVA, Type
460V - 230V
Spec 105-T
60 Hz, 1 Ph, C1
Ser # 13975-12
13970-12
13975-12

2. GALLEY EQUIPMENT: Marcus Transformer
(3) 25KVA, Type
460V - 230V
Spec 105-T
60 Hz, 1 Ph, C1
Ser # 13975-12
13977-12
13980-12

3. Shore Power: Marcus Transformer
150KVA, Type E
575V - 460V
Spec 2552
60 Hz, 3 Ph, C1
Ser # 5210-158

4. Non-Ess Power Pn#1: Acme Division T
8KVA - 208Y/120
480V - 3 Ph, C1
Ser # 11253-5

Refit	EL-05	DC Distribution Ground Faults/PMC -ground fault detecting relay installed January 2018 -update drawings and distribution as required. -investigate the faults caused on the PMC system when running the E-gen. Fault was traced to the ground fault relay ground connection. -in	KOHO	
Refit	EL-16	Bow Thruster Cabinet Replace bow thruster cabinet with size more suitable for new Siemens SCR drive. Cabinet was not replaced when electronics were replaced due to time & \$ constraints. Smaller cabinet would create more much needed room in the "gym" space.	Contract	CCR
Refit	E-18	Cable Transit Testing & Repair See correspondence. Note that prior Jan. 2018 Refit, we had only completed the engineroom, AMS, and MCR bulkhead transits, leaving 25-66% of transit testing outstanding.	Contractor / KOHO	Repeat. See R-60
	E-19	IGARD Ground Fault Detector Integration with PMC Alarm Panel -ground faults on heating and galley are presently only detect at the attention of the watch keepers viewing the ground fault display. -these panels should have a voltage free (dry) set of contacts we could use with PMC to given an alarm. -this would help when running the AC plant with the reheat system working. Ground faults would not go unknown and allow the engineers to act to rectify the faults. -see NWE Asbestos precautions as the wiring passes into the MCR console.	SC/Contractor	
	E-20	Unpacked Transit on top of Non-Essential Distribution Panel (MCR) -transit is not packed. Will require the non-essential panel to be isolated during repairs.		
	E-22	Arc Flash Relay Install on MCR Breakers		Arc flash shields ACM-free cert
	E-25	Convection Oven -insufficient ventilation from bottom panel the oven is mounted on. Add details		

E-26	Ships Wiring Condition Assessment	KOHO	Estimating that 1/3 of ships wiring needs replacing or repairing – est \$30K
------	-----------------------------------	------	--

Deck			
No.	Description	Resource	Comments
D-01	<p>Port-Light Weld Repairs Options:</p> <ol style="list-style-type: none">1. Identify & Specify what is required – ie chalk test all of them2. replace them all, (PRIORITIZED)3. have United Eng repair them all. <p>Attached is a copy of the Porthole Inspection completed last month. 6/11/2017</p> <p>As you noted; all porthole seals passed a chalk test last patrol and it is winter for this refit, perhaps repairs on porthole when they are not currently failing is not a priority. However, for reference in the future (*May/June Refit) the following is a list of the locations for the portholes that are in the worst condition:</p> <ul style="list-style-type: none">• U16 – Sick Bay• U17 – Senior Engineer Head• U30 – Port side 2nd cabin fwd of WT door• U31 – Stbd side aft of WT door• Laundry Room Fwd• Laundry Room Aft	Summer Refit	<p>See D-02 and E-56</p> <p>SEs Outboard Port Hole weld Repaired top & bottom by United. Jun.2017 Worse than anticipated. RM</p> <p>All Porthole gaskets replaced. Jun.2017. 40 Durometer 3/8" x 3/8" rubber ordered from NE Seal. RM.</p>
Refit			

Location	Location of Worst Corrosion	Comments
U 14		No Corrosion
U 15		No Corrosion
U 16	4 to 6 o'clock position and 12 o'clock	Extensive scale and corrosion
U 17 Head	4 to 6 o'clock position	Extensive scale and corrosion
U 22		Scale and corrosion
U 23		Scale and corrosion
U 26		Scale and corrosion

[illegible]

			workspaces. But not so easy to do while crewed.		Pre-Work Assessment and Clearance document for the jobs. RM.
			Various ACM Remedial Jobs performed, Including: 1. AMS 2. Stb'd-Aft Upper Deck (transit) above sewage media tank -- This job was too huge to attempt this Refit.		
	Refit	D-04b	Crew's Cabins Upgrades Supply Officer's Cabin: Double Cupboard Required, Office Reconfig, ACM bulkhead removal.	ProNautic / Gregg's Marine	
	Refit	D-06	Port/Stbd Running Light Blinders/Shrouds -replace wasted steel -crop and replace corroded steel with inserts (using inserts negates potential error in repositioning new steel & alignment) -check condition of single hold-down bolt -install metal patches as interim measure? -use existing running light shrouds to position new lights accurately -CCR to replace with LED lights has been submitted.	Drydock	New Jastram LED Lights may change this requirement to removing running light shrouds / blinders rather than repairing. But install also a Fall-Arrest clip on points & outboard railing P&S. Note evidence on W/H top of previous outboard railing having been cropped off. RM.
	Refit	D-7a	Fall-Arrest Clip-On Points & Railing on Port & Stb'd Wheelhouse Top Necessary for running light shroud repair and light installation.	Contract	Leave this until June 2018
	Refit	D-7b	Fall-Arrest Clip-On Points, multiple Install pad eyes according to strict Fall-Arrest guidelines → having clip-on points certified for minimum 5,000 lbs and certified by Professional Engineer. Re: fall arrest Anchorages that we are getting installed around the bridge, the regulations state that they must be certified by a licensed professional engineer, have a minimum breaking strength of 22.2kN (5000lbs) and that they must be tested. The should be spaced out just above the bridge windows every 6 ft. No other fall arrest anchors required? Replacing Standing Wires for goal posts?	Contract	Welding to wheelhouse front will require firewatch on bridge (and removal of bridge deckhead panels). OK'd railing as anchor point. C/O

No information has been removed or severed from this page

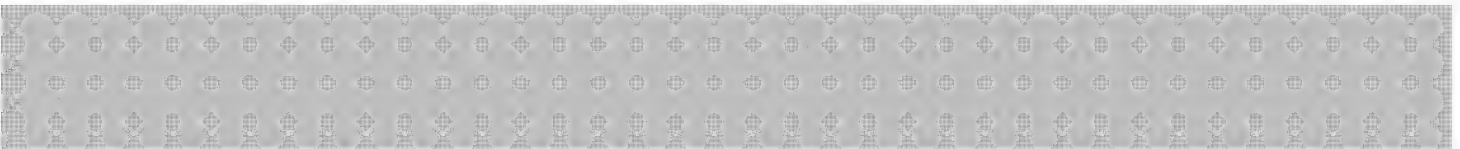
Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May 1, 2018 2:25 PM
To: CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: FW: Electronic Console CCR Drafts
Attachments: Electronic Console ACM Abatement & Rewiring.pdf; Bridge Fire Panel Isolation - Re ACM Abatement.pdf

Importance: High

Capt,

Once you have signed CCRs (if you choose to), then I will complete them and forward them to Gabe so that he can start working on actioning them for refit (electrical & asbestos contracts at least).



Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: April-27-18 6:42 PM
To: CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer
Subject: Electronic Console CCR Drafts
Importance: High

Capt,

I drafted the following CCRs: (in S-Drive "2. In Process ..." folder)

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

Configuration Change Request (CCR)

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1. Identification

CCR Number	Originator	R.McKenzie	☎	250.882.1273	Date	2018-04-27
	Contact		☎		Region	Western Region
	Contact		☎			
CCR Title	Electronic Console ACM Abatement & Rewiring		AMS W.O.#:			
Equipment	Integrated Control Systems		ABS #:	19D		
System	Bridge & Engine Room Controls		Asset Title:	Bridge & Eng Room Electronics Consoles		
Drawings and/or specification affected						
Type of work	<input type="checkbox"/> HME	<input checked="" type="checkbox"/> E & I	<input type="checkbox"/> MCI	<input type="checkbox"/> S / ER		

2. Category

Priority	Description					
Normal <input type="checkbox"/>	The proposed configuration change is justified, but not urgent or high priority.					
High <input type="checkbox"/>	A solution to an operational or technical problem must be determined and implemented within three months.					
Urgent <input checked="" type="checkbox"/>	Affects safety or the ability to conduct operations and must be implemented immediately.					
Scope:		<input type="checkbox"/> Minor	<input checked="" type="checkbox"/> Major	<input type="checkbox"/> Major National	Description: Form, Fit Function	

3. Proposed Configuration Change (Add attachment as required to explain the situation in detail)

EXISTING CONDITIONS: Item affected. Identify contracts, systems, subsystems and when possible, contract and items or components affected by change.

Asbestos Containing Dust Levels in 3 of the Bridge Consoles were measured as: 9,990,000 structures / cm², 6,040,000 & 370,000. the Motor Control Room console ACM Dust concentration was measured at: 28,800 on top of console, and presumably higher within (sample results not found), compared to the Laundry Room which was only 14,800 s/cm². Latent ACM Dust Concentrations from 10,000 - 100,000 s/cm² are deemed to be in the Moderate Range, the High Range presumably being from 100,000 s/cm² - 1,000,000 s/cm². All of the consoles are vented to the surrounding compartment atmosphere (Bridge and MCR), and workers are therefore exposed to these or similar dust levels. Note that it has not been determined whether the asbestos dust was generated from within the consoles or outside of them.

RECOMMENDED SOLUTION: Describe hardware or software modification, and / or recommended study to correct the problem or to capitalize on an improvement opportunity. Rough sketches or diagrams may be attached to amplify this description. Enter rough cost estimate for the project.

Rewire the consoles, and hand wipe all components, such that residual concentration of asbestos fall below a safe threshold.

ANTICIPATED BENEFITS: How change will improve systems, e.g. reliability, reduced weight, decreased cost, substantially improved performance.

Comply with Worksafe BC Regulations.
Create a safe working atmosphere for ship's crew to breathe.
Reduce costs of future work in Electronic consoles.
Minimize vessel downtime by not having to create Medium - High Risk work every time an electronic console is required to be opened for inspection or repair of critical machinery and/or electronic components.
Improve likelihood that a contractor will agree to service our electronics (which (s)he may otherwise refuse in the job entails working with asbestos or other hazardous materials).

IMPACT ON MAINTENANCE BUDGET: Yes ☒ No ☐ **IMPACT ON OPERATIONAL BUDGET:** Yes ☒ No ☐

Impact of not implementing change e.g. safety hazard, mission failure, high maintenance costs, schedule slippage. Explain relative desirability of each alternative way to meet need for change.

Failing to comply with Worksafe BC Regulations.
Create a hazardous working atmosphere for ship's crew to breathe.
Maximizing costs of future work in Electronic consoles.
Maximizing vessel downtime by not having to create Medium - High Risk work every time an electronic console is required to be opened for inspection or repair of critical machinery and/or electronic components.
Reduce likelihood that a contractor will agree to service our electronics (which (s)he may otherwise refuse in the job entails working with asbestos or other hazardous materials).

PRELIMINARY Estimated Cost by Fiscal Year			Total Estimated Cost
FY:	FY + 1	FY + 2	(attach sheet with details)
\$200,000.00			\$200,000.00

Total Cost includes : Purchase, fabrication, installation, training, updated drawings and publications, etc.

Configuration Change Request (CCR)

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4. CCR Impact Assessment Checklist

Step 1	If impact applies, select (☑) for each item selected, attach file containing supporting details or AMS W.O. number related.	
Step 2	To close CCR, (See Section 10) Verify that the action required to address impact was completed and attach the file containing supporting details or AMS W.O. # related.	
#	1	Will Change have an impact on: (Give a brief description in an attached file.)
1	<input type="checkbox"/>	Safety, health, habitability and human factors.
2	<input type="checkbox"/>	Operational capacity, performance, and/or reliability.
3	<input type="checkbox"/>	Compliance with laws/regulations and security requirements.
4	<input type="checkbox"/>	Ship Stability, changes requirements - weight added and removed (Refer to standard operating procedure).
5	<input type="checkbox"/>	Other similar systems or interfaces with other systems.
6	<input type="checkbox"/>	Real property.
7	<input type="checkbox"/>	Environment.
8	<input type="checkbox"/>	Other configuration changes that have been proposed or approved.
9	<input type="checkbox"/>	Electrical power requirement; Electromagnetic compatibility; Equipment removal routes; HVAC and cooling.
10	<input type="checkbox"/>	Existing inspections, tests and/or trials.
11	<input type="checkbox"/>	IT Security: Seek Regional or National IT Security Coordinator advice where change could potentially compromise IT security. Arrange for action required (e.g. Risk Assessment, supporting documentation, etc) to maintain IT system security.
12	<input type="checkbox"/>	Operations and Maintenance costs.
13	<input type="checkbox"/>	Software.
14	<input type="checkbox"/>	Procurement : Procure as necessary: Modification kits; Spares, repair parts and consumables; Special tools; Test equipment; and Diagnostic software.
15	<input type="checkbox"/>	Existing inventory : Locate and modify all affected spares held in inventory.
16	<input type="checkbox"/>	Disposal : Locate and purge all equipment and parts that are no longer required.
17	<input type="checkbox"/>	Technical Data : Revise the affected drawing indices, drawings and parts lists. Affected Drawing(s) #:
18	<input type="checkbox"/>	Amend the operating manuals and maintenance manuals affected by the modification.
19	<input type="checkbox"/>	Update the maintenance requirements to be consistent with the revised configuration.
20	<input type="checkbox"/>	Training : Update the training of personnel to reflect the modified equipment, including the revision of training
21	<input type="checkbox"/>	Facilities : Modify / renovate facilities as necessary, including installation requirements such as space, power, air conditioning, lighting, etc.
22	<input type="checkbox"/>	AMS: Update the asset structure in the Asset Management System, identifying new maintenance items.
23	<input type="checkbox"/>	CM File: Place all documents pertaining to modification approval in the modification documentation file and retain for reference.
24	<input type="checkbox"/>	

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5.0 Unit / Originator Signatures

Once CCR is completed section 1 to 4, Originator signed here. In case of double crew vessels, space is available for concurrence by both Commanding Officers and Chief Engineers. Then transmit to Regional Office for evaluation.

1A	Ross McKenzie	Ross McKenzie	Chief Engineer	2018-04-27
	Name	Signature	Title	Date
1B				
	Name	Signature	Title	Date
2A				
	Name	Signature	Title	Date
2B				
	Name	Signature	Title	Date

5.1 Final Verification (For ships only)

CCR is well completed all the information has been verified, Vessel Maintenance Manager (VMM) Recommend this CCR.

Name	Signature	Title	Date

Configuration Change Request (CCR)

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6. Regional Evaluation

Yes	No	Responsibility of Committee members to evaluate documentation before Regional approval.			
<input type="checkbox"/>	<input type="checkbox"/>	Change is properly documented section 3, including detailed description, photos, sketches and/or drawings.			
<input type="checkbox"/>	<input type="checkbox"/>	Change is justified: given operational role, age and life expectancy of asset (justification is attached).			
<input type="checkbox"/>	<input type="checkbox"/>	All items on impacts assessment are either not applicable or have been assessed as acceptable or modification plan is attached.			
If the file is incomplete, return to originator and comments:					
Date: _____					
For a Minor CCR, all three signatures are required in Part 6, a copy of the form and package is to be forwarded to the National Configuration Change Request Coordinator (NCCRC) for information as soon as it is approved by the region. For a Major CCR, the signature of the Operational and Technical Authorities are required to confirm support by the Region. A copy of the form and package is to be forwarded to the NCCRC for action at HQ. NationalCCRCoordinator@DFO-MPO.GC.CA					
Yes	No	Operational Authority			
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title	Date
Technical Authority					
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title	Date
Financial Authority (For Minor CCR only)					
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title	Date
Regional Committee Decision		<input type="checkbox"/> Reject <input type="checkbox"/> Defer			
		<input type="checkbox"/> Minor CCR: Approval		<input type="checkbox"/> Develop / Engineering	
		<input type="checkbox"/> Major CCR: Recommend		<input type="checkbox"/> Implementation	
Comments:					
Minor Funding Source		Project #	AMS Work Order #	WBS #	

7. National Headquarters Evaluation

Yes	No	Operational Authority			
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title	Date
Technical Authority					
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title	Date
Asset Class Manager					
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title	Date
National Committee Decision		<input type="checkbox"/> Defer <input type="checkbox"/> Reject			
		<input type="checkbox"/> Minor CCR: Approval		<input type="checkbox"/> Develop / Engineering	
		<input type="checkbox"/> Major CCR: Recommend		<input type="checkbox"/> Implementation	
Comments:					

Configuration Change Request (CCR)

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8. Assigned Responsibility and Updated Estimate			
Engineering OPI:			
	Name	Title	
Installation OPI:			
	Name	Title	
Preliminary Engineering Study (if required, cost and source):			
Recommended Timing (Start date; duration):			
Recommended Source (Service Delivery)			
Estimated Cost by Fiscal Year			Total Estimated Cost
FY:	FY + 1	FY + 2	(attach sheet with details)
			\$0.00

9. Configuration Control Board (CCB) Decisions			
Yes	No	Responsibility of Committee members to evaluate documentation before Regional approval.	
<input type="checkbox"/>	<input type="checkbox"/>	Change is properly documented section 3, including detailed description, sketch and/or drawings.	
<input type="checkbox"/>	<input type="checkbox"/>	Change is justified: given operational role, age and life expectancy of asset (justification is attached).	
<input type="checkbox"/>	<input type="checkbox"/>	All items on impacts assessment are either not applicable or have been assessed as acceptable or modification plan is attached.	
If the file is incomplete, return to originator and comments			
			Date
Note: The mandate of the HQ Configuration Control Board (CCB) is to provide "Approval in Principle" , approval for "Development / Engineering or Prototype" regarding the proposed solution within the Configuration Change Request (CCR). The CCB does not approve the assignment of financial resources, which is the mandate of the respective National Management Committee (NMC).			
Preliminary Approval		<input type="checkbox"/> Develop / Engineering Study	<input type="checkbox"/> Prototype
Chairperson:			
	Name	Signature	Date
CCB Approval		<input type="checkbox"/> Approve In Principle	<input type="checkbox"/> Reject <input type="checkbox"/> Defer
Chairperson:			
	Name	Signature	Date
CCB Instructions:			
Asset Class Manager:	AMS Work Order #	Project #:	WBS #
Expenditures by Fiscal Year			Total Estimated Cost
FY:	FY + 1	FY + 2	(attach sheet with details)
			\$0.00

10. Final Approval for Close out (Same persons or replacement who signed at section 5.0)			
A- Unit / Originator - Confirming that work is complete.			
1	Signature	Date	3
			Signature
			Date
Print Name/Title :		Print Name/Title :	
2		4	
Print Name/Title :		Print Name/Title :	
B- Engineering OPI Signature (Engineering OPI who closes the CCR must ensure that work identified in sections 4 Step 2, are implemented.)			
Implementation, inspection, test and/or trial results:			
*Note to OPI: A copy of the completed form and supporting details to be forwarded to the NCCRC. See SOP Para 3.6.1			
Total Cost at Completion:		Date:	Signature OPI:

Configuration Change Request (CCR)

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1. Identification					
CCR Number	Originator	R.McKenzie	250.882.1273	Date	2018-04-27
	Contact			Region	Western Region
	Contact				
CCR Title	Bridge Fire Panel Asbestos Abatement		AMS W.O.#:		
Equipment	Safety and Security Equipment		ABS #:	10E01J04	
System	Fire Monitor System		Asset Title:	Notifier Monitor Unit	
Drawings and/or specification affected					
Type of work	<input type="checkbox"/> HME	<input checked="" type="checkbox"/> E & I	<input type="checkbox"/> MCI	<input type="checkbox"/> S / ER	

2. Category					
Priority	Description				
Normal <input type="checkbox"/>	The proposed configuration change is justified, but not urgent or high priority.				
High <input type="checkbox"/>	A solution to an operational or technical problem must be determined and implemented within three months.				
Urgent <input checked="" type="checkbox"/>	Affects safety or the ability to conduct operations and must be implemented immediately.				
Scope:	<input checked="" type="checkbox"/> Minor	<input type="checkbox"/> Major	<input type="checkbox"/> Major National	Description: Form, Fit Function	

3. Proposed Configuration Change (Add attachment as required to explain the situation in detail)					
EXISTING CONDITIONS: Item affected. Identify contracts, systems, subsystems and when possible, contract and items or components affected by change.					
<p>Asbestos Containing Dust Levels in the Bridge Fire Detection Panel Console was measured as: 9,990,000 structures / cm² & 6,040,00 s/cm². Latent ACM Dust Concentrations from 10,000 - 100,000 s/cm² are deemed to be in the Moderate Range. The 9.99 M s/cm² count is 27 times the level of asbestos measured in the Wing Console (370,000 s/cm²), and 675 times the level of asbestos measured in the Laundry Room (14,800 s/cm²).</p> <p>The consoles are vented to the surrounding compartment atmosphere (Bridge and MCR), and workers could therefore potentially be exposed to similar airborne dust levels. Note that it has not been determined whether the asbestos dust was generated from within the console or from outside in.</p> <p>RECOMMENDED SOLUTION: Describe hardware or software modification, and / or recommended study to correct the problem or to capitalize on an improvement opportunity. Rough sketches or diagrams may be attached to amplify this description. Enter rough cost estimate for the project.</p> <p>A. Best Solution: Remove all asbestos from this console, and seal transits from console to Void Space below Wheelhouse. This will require rewiring the entire console.</p> <p>B. Interim & temporary solution until the asbestos can be fully removed from the console; we could do the following:</p> <ol style="list-style-type: none"> 1. Remove door from Notifier panel and install insert on top of Notifier Fire Panel (see Diag.1 attached) to allow worker to examine display readout & display functions without being exposed to asbestos containing dust within the console. 2. Replace all cable glands with airtight glands to seal Notifier panel from console interior. 3. Seal all thru-deck transits to Void Space below. (Regulation - firestop) 4. Install Hepa filters on console vent lovers, (but must consult with Viking & VIEW to ensure that the filters do not impede air flow to the extent that electronic components do not get sufficient cooling). 5. Install vacuum cleaner attachment to console to facilitate "negative pressure" in console whenever access is required for repair or inspection, (spring-loaded to close like home central vacuum fitting). 					
ANTICIPATED BENEFITS: How change will improve systems, e.g. reliability, reduced weight, decreased cost, substantially improved performance.					
<p>Create a safe working atmosphere for ship's crew to breathe.</p> <p>Reduce costs of future work in Electronic consoles.</p> <p>Minimize vessel downtime by not having to create Medium - High Risk work every time an electronic console is required to be opened for inspection or repair of critical propulsion machinery and/or electronic components.</p> <p>Improve likelihood that a contractor will agree to service our electronics (which (s)he may otherwise refuse in the job entails working with asbestos).</p>					
IMPACT ON MAINTENANCE BUDGET:		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	IMPACT ON OPERATIONAL BUDGET:	
		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Impact of not implementing change e.g. safety hazard, mission failure, high maintenance costs, schedule slippage. Explain relative desirability of each alternative way to meet need for change.					
<p>Potentially creating a hazardous working atmosphere for ship's crew to breathe.</p> <p>Maximizing costs of future work in Electronic consoles.</p> <p>Maximizing vessel downtime by not having to create Medium - High Risk ACM work every time an electronic console is required to be opened for inspection or repair of critical machinery and/or electronic components.</p> <p>Increased possibility that a contractor will not agree to service our electronics (on the premise that the job entails working with asbestos).</p>					
PRELIMINARY Estimated Cost by Fiscal Year					Total Estimated Cost
FY:	FY + 1	FY + 2	(attach sheet with details)		
\$5,000.00			\$5,000.00		
Total Cost includes : Purchase, fabrication, installation, training, updated drawings and publications, etc.					

Configuration Change Request (CCR)

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4. CCR Impact Assessment Checklist

Step 1	If impact applies, select (X) for each item selected, attach file containing supporting details or AMS W.O. number related.	
Step 2	To close CCR, (See Section 10) Verify that the action required to address impact was completed and attach the file containing supporting details or AMS W.O. # related.	
#	1 Will Change have an impact on: (Give a brief description in an attached file.)	
1	<input checked="" type="checkbox"/> Safety, health, habitability and human factors.	Currently Potential Risk of Airbourne Asbestos on Bridge
2	<input checked="" type="checkbox"/> Operational capacity, performance, and/or reliability.	Currently reduced capacity & reliability --> unable to access consoles.
3	<input checked="" type="checkbox"/> Compliance with laws/regulations and security requirements.	Extremely High Asbestos dust levels pose severe health risk.
4	<input type="checkbox"/>	Ship Stability, changes requirements - weight added and removed (Refer to standard operating procedure).
5	<input checked="" type="checkbox"/> Other similar systems or interfaces with other systems.	MCR (Motor Control Room) similarly affected.
6	<input type="checkbox"/> Real property.	
7	<input type="checkbox"/> Environment.	
8	<input type="checkbox"/> Other configuration changes that have been proposed or approved.	
9	<input checked="" type="checkbox"/>	Electrical power requirement; Electromagnetic compatibility; Equipment removal routes; HVAC and cooling. Cooling of electronics while simultaneously reducing air flow thru electronic consoles by sealing transits & fitting HEPA filters.
10	<input checked="" type="checkbox"/> Existing inspections, tests and/or trials.	Additional ACM air sampling & dust swipes required.
11	<input type="checkbox"/>	IT Security: Seek Regional or National IT Security Coordinator advice where change could potentially compromise IT security. Arrange for action required (e.g. Risk Assessment, supporting documentation, etc) to maintain IT system security.
12	<input checked="" type="checkbox"/> Operations and Maintenance costs.	Full asbestos abatement will minimize future resources costs, (dollars, time, labour).
13	<input type="checkbox"/> Software.	
14	<input checked="" type="checkbox"/>	Procurement : Procure as necessary: Modification kits; Spares, repair parts and consumables; Special tools; Test equipment; and Diagnostic software. Recommend regular air sampling & testing as proof that reasonable abatement procedures are effective.
15	<input type="checkbox"/>	Existing inventory : Locate and modify all affected spares held in inventory.
16	<input type="checkbox"/>	Disposal : Locate and purge all equipment and parts that are no longer required.
17	<input type="checkbox"/>	Technical Data : Revise the affected drawing indices, drawings and parts lists. Affected Drawing(s) #:
18	<input type="checkbox"/>	Amend the operating manuals and maintenance manuals affected by the modification.
19	<input checked="" type="checkbox"/>	Update the maintenance requirements to be consistent with the revised configuration. Known ACM hazards must be documented, and precise procedures for opening or working in electronic consoles documented.
20	<input checked="" type="checkbox"/>	Training : Update the training of personnel to reflect the modified equipment, including the revision of training All personnel opening or working in electronic consoles with ACM warning, MUST have Asbestos Abatement training (Awareness)
21	<input checked="" type="checkbox"/>	Facilities : Modify / renovate facilities as necessary, including installation requirements such as space, power, air conditioning, lighting, etc. Electronic Cabinets with documented hazardous asbestos dust must be abated and/or modified to render occupied areas safe.
22	<input checked="" type="checkbox"/>	AMS: Update the asset structure in the Asset Management System, identifying new maintenance items. Existing Annual Asbestos Survey will require updating to reflect new findings & new warnings and highlighted asbestos concerns.
23	<input type="checkbox"/>	CM File: Place all documents pertaining to modification approval in the modification documentation file and retain for reference.
24	<input type="checkbox"/>	

Configuration Change Request (CCR)

Email DATA

Email PDF

Print

5.0 Unit / Originator Signatures

Once CCR is completed section 1. to 4, Originator signed here. In case of double crew vessels, space is available for concurrence by both Commanding Officers and Chief Engineers. Then transmit to Regional Office for evaluation.

1A	Ross McKenzie	Ross McKenzie	Chief Engineer	2018-04-27
	Name	Signature	Title	Date
1B				
	Name	Signature	Title	Date
2A				
	Name	Signature	Title	Date
2B				
	Name	Signature	Title	Date

5.1 Final Verification (For ships only)

CCR is well completed all the information has been verified, Vessel Maintenance Manager (VMM) Recommend this CCR.

Name	Signature	Title	Date

Configuration Change Request (CCR)

Email DATA

Email PDF

Print

6. Regional Evaluation				
Yes	No	Responsibility of Committee members to evaluate documentation before Regional approval.		
<input type="checkbox"/>	<input type="checkbox"/>	Change is properly documented section 3, including detailed description, photos, sketches and/or drawings.		
<input type="checkbox"/>	<input type="checkbox"/>	Change is justified: given operational role, age and life expectancy of asset (justification is attached).		
<input type="checkbox"/>	<input type="checkbox"/>	All items on impacts assessment are either not applicable or have been assessed as acceptable or modification plan is attached.		
If the file is incomplete, return to originator and comments:				
				Date:
For a Minor CCR, all three signatures are required in Part 6, a copy of the form and package is to be forwarded to the National Configuration Change Request Coordinator (NCCRC) for information as soon as it is approved by the region.				
For a Major CCR, the signature of the Operational and Technical Authorities are required to confirm support by the Region. A copy of the form and package is to be forwarded to the NCCRC for action at HQ. NationalCCRCoordinator@DFO-MPO.GC.CA				
Yes	No	Operational Authority		
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title
				Date
		Technical Authority		
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title
				Date
		Financial Authority (For Minor CCR only)		
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title
				Date
Regional Committee Decision		<input type="checkbox"/> Reject <input type="checkbox"/> Defer		
		<input type="checkbox"/> Minor CCR: Approval <input type="checkbox"/> Develop / Engineering		
		<input type="checkbox"/> Major CCR: Recommend <input type="checkbox"/> Implementation		
Comments:				
Minor Funding Source		Project #	AMS Work Order #	WBS #

7. National Headquarters Evaluation				
Yes	No	Operational Authority		
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title
				Date
		Technical Authority		
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title
				Date
		Asset Class Manager		
<input type="checkbox"/>	<input type="checkbox"/>	Name	Signature	Title
				Date
National Committee Decision		<input type="checkbox"/> Defer <input type="checkbox"/> Reject		
		<input type="checkbox"/> Minor CCR: Approval <input type="checkbox"/> Develop / Engineering		
		<input type="checkbox"/> Major CCR: Recommend <input type="checkbox"/> Implementation		
Comments:				

Configuration Change Request (CCR)

Email DATA

Email PDF

Print

8. Assigned Responsibility and Updated Estimate			
Engineering OPI:			
		Name	Title
Installation OPI:			
		Name	Title
Preliminary Engineering Study (if required, cost and source):			
Recommended Timing (Start date; duration):			
Recommended Source (Service Delivery)			
Estimated Cost by Fiscal Year			Total Estimated Cost
FY:	FY + 1	FY + 2	(attach sheet with details)
			\$0.00

9. Configuration Control Board (CCB) Decisions			
Yes	No	Responsibility of Committee members to evaluate documentation before Regional approval.	
<input type="checkbox"/>	<input type="checkbox"/>	Change is properly documented section 3, including detailed description, sketch and/or drawings.	
<input type="checkbox"/>	<input type="checkbox"/>	Change is justified: given operational role, age and life expectancy of asset (justification is attached).	
<input type="checkbox"/>	<input type="checkbox"/>	All items on impacts assessment are either not applicable or have been assessed as acceptable or modification plan is attached.	
If the file is incomplete, return to originator and comments:			
			Date
Note: The mandate of the HQ Configuration Control Board (CCB) is to provide "Approval in Principle", approval for "Development / Engineering or Prototype" regarding the proposed solution within the Configuration Change Request (CCR). The CCB does not approve the assignment of financial resources, which is the mandate of the respective National Management Committee (NMC).			
Preliminary Approval		<input type="checkbox"/> Develop / Engineering Study	<input type="checkbox"/> Prototype
Chairperson:			
		Name	Signature Date
CCB Approval		<input type="checkbox"/> Approve In Principle	<input type="checkbox"/> Reject <input type="checkbox"/> Defer
Chairperson:			
		Name	Signature Date
CCB Instructions:			
Asset Class Manager:		AMS Work Order #	Project #: WBS #
Expenditures by Fiscal Year			Total Estimated Cost
FY:	FY + 1	FY + 2	(attach sheet with details)
			\$0.00

10. Final Approval for Close out (Same persons or replacement who signed at section 5.0)			
A- Unit / Originator - Confirming that work is complete.			
1	Signature	Date	3
			Signature Date
Print Name/Title :		Print Name/Title :	
2		4	
Print Name/Title :		Print Name/Title :	
B- Engineering OPI Signature (Engineering OPI who closes the CCR must ensure that work identified in sections 4 Step 2, are implemented.)			
Implementation, inspection, test and/or trial results:			
*Note to OPI: A copy of the completed form and supporting details to be forwarded to the NCCRC. See SOP Para 3.6.1			
Total Cost at Completion:		Date:	Signature OPI.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May 4, 2018 8:39 AM
To: CCGS-NGCC, Bartlett Engine Room
Subject: FW: Bartlett Bridge Consoles
Attachments: Bartlett Telecon Summary and Notes - March 28

Importance: High

FYI

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [<mailto:Gabriel.Chaikin@dfo-mpo.gc.ca>]
Sent: March-28-18 4:06 PM
To: Readman Tristan
Cc: Granger Louise Anne; CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Captain
Subject: Bartlett Bridge Consoles

Tristan,

This afternoon the Bartlett Chief, Captain and myself had a conference call with North West Environmental. The purpose of the discussion was the way forward for the Bartlett bridge consoles and specifically how can we get technicians into these spaces without endangering themselves or contaminating the bridge. I've included the notes from that talk as an attachment.

It is unlikely that we are going to get to an asbestos-free condition within the consoles and they are open to the crawl space so the entire area must be considered as contaminated. The spaces have been professionally cleaned but more dust is guaranteed to accumulate. The good news here is that with the use of the ship's certified HEPA vacuum before and after working in the consoles, contamination of the bridge is a non-issue according to NWE.

In order to access these areas all technicians will require some level of asbestos training. This could be the 4 hour Basic Awareness course or the 2 day Abatement Level II. [REDACTED] from NWE is going to get back to me with more details on this question. The abatement course is meant for people who will be repairing or encapsulating containing material, but extra training may be better. Separate from this training the technician will require a half mask so fit testing either with [REDACTED] or NWE is necessary.

A potential work around in the mean-time would be to utilize trained ship's engineers to complete work inside the consoles. I know this is less than ideal all around but the Chief offered this option so I had to mention it.

The Chief is also currently developing a plan to place the consoles and the crawl space under negative pressure and HEPA filtering the air both as it enters the crawlspace from the consoles and as it is exhausted overboard.

The Bartlett is expected alongside at IOS on April 9th. I will be onboard that day and will be available if you would like to come out or send someone out to discuss further.

Regards,

 Gabriel Chaikin

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering
Fisheries and Oceans Canada / Government of Canada
gabriel.chaikin@dfo-mpo.gc.ca / Tel: 250-363-0228

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale
Pêches et Océans Canada / Gouvernement du Canada
gabriel.chaikin@dfo-mpo.gc.ca / Tél. : 250-363-0228

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>
Sent: May-04-18 8:44 AM
To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Wheelhouse; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer
Subject: RE: Bartlett Bridge Consoles

For this teleconference it was [REDACTED] Captain Mike McCullagha, [REDACTED] and myself.

Gabriel Chaikin
 Marine Engineering | Ingénierie navale
 (250) 363-0228

From: CCGS-NGCC, Bartlett Chief Engineer [<mailto:BartlettCE@ccgs-ngcc.gc.ca>]
Sent: 2018-May-04 8:37 AM
To: CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Wheelhouse; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin, Gabriel; CCGS-NGCC, Bartlett Chief Engineer
Subject: FW: Bartlett Bridge Consoles
Importance: High

Captain,

The attached email & attachment summarizes some decisions & opinions.

Regards,

Ross McKenzie
 Chief Engineer, CCGS Bartlett
 Cell: [REDACTED]
BartlettCE@bar.ccgs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [<mailto:Gabriel.Chaikin@dfo-mpo.gc.ca>]
Sent: March-28-18 4:06 PM
To: Readman Tristan
Cc: Granger Louise Anne; CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Captain
Subject: Bartlett Bridge Consoles

Tristan,

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dust is guaranteed to accumulate. The good news here is that with the use of the ship's certified HEPA vacuum before and after working in the consoles, contamination of the bridge is a non-issue according to NWE.

In order to access these areas all technicians will require some level of asbestos training. This could be the 4 hour Basic Awareness course or the 2 day Abatement Level II. [REDACTED] from NWE is going to get back to me with more details on this question. The abatement course is meant for people who will be repairing or encapsulating containing material, but extra training may be better. Separate from this training the technician will require a half mask so fit testing either with Dave Nesbitt or NWE is necessary.

A potential work around in the mean-time would be to utilize trained ship's engineers to complete work inside the consoles. I know this is less than ideal all around but the Chief offered this option so I had to mention it.

The Chief is also currently developing a plan to place the consoles and the crawl space under negative pressure and HEPA filtering the air both as it enters the crawlspace from the consoles and as it is exhausted overboard.

The Bartlett is expected alongside at IOS on April 9th. I will be onboard that day and will be available if you would like to come out or send someone out to discuss further.

Regards,

Gabriel Chaikin

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering
Fisheries and Oceans Canada / Government of Canada
gabriel.chaikin@dfo-mpo.gc.ca / Tel: 250-363-0228

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale
Pêches et Océans Canada / Gouvernement du Canada
gabriel.chaikin@dfo-mpo.gc.ca / Tél. : 250-363-0228

CCGS-NGCC, Bartlett Chief Officer

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>
Sent: June-30-18 5:19 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer
Subject: Re: ACM on ship as per Environmental Assessment

s.16(2)

s.19(1)

s.21(1)(b)

Sent from my BlackBerry 10 smartphone on the Bell network.

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: Saturday, June 30, 2018 16:31
To: Chaikin, Gabriel
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer
Subject: RE: ACM on ship as per Environmental Assessment

Gabe,

1. I have consulted with the Captain and Marine Superintendent on this issue (Capt M. Shuckburg), and we are proceeding in a responsible manner.

2.

3.

4.

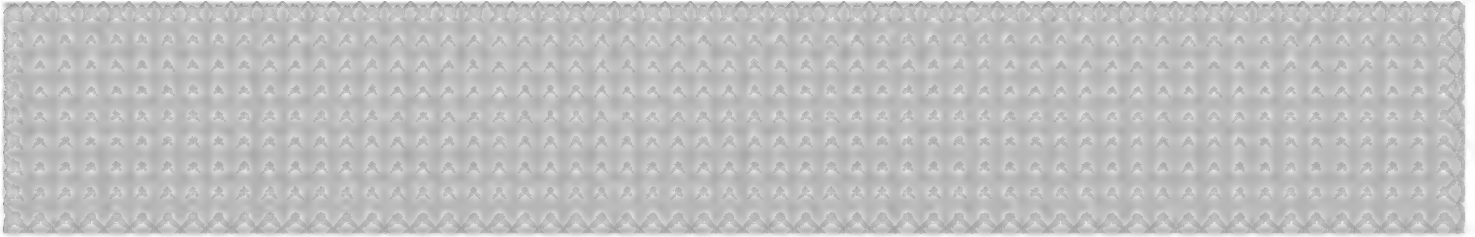
Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]
Sent: June-30-18 2:17 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Re: ACM on ship as per Environmental Assessment

Ross,

On Friday morning at our WER meeting [REDACTED] and I talked this out. [REDACTED] came in also and I had him relay the event. From all of our perspective there is low possibility of exposure. That doesn't mean there isn't a chance.



Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: Saturday, June 30, 2018 09:47

To: [REDACTED]

Cc: Chaikin, Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer

Subject: RE: ACM on ship as per Environmental Assessment

Good Day [REDACTED],

It is regrettable that this incident transpired. We are conducting our own Incident Investigation regarding this matter, and shall likely be consulting with you & your staff in the process of completing our investigation, after which we will be in a better position to directly reply to your questions to your full satisfaction.

Respectfully,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccgsg-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]

Sent: June-29-18 10:52 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: ACM on ship as per Environmental Assessment

Ross,

It has come to my attention that a material containing ACM was disturbed while servicing on the water tight doors. I realize the environmental assessment has been forwarded to me and I have made a copy available to my crew. As I have

to do a safety investigation about this incident the one glaring thing that has come to my attention is that in contravention with WorksafeBC regulations as follows;

6.13 Designated area

- (1) Before starting work with asbestos-containing material, the employer must, with due regard for the level of risk,
 - (a) identify and mark the boundary of the designated work area by barricades, fences, or similar means,
 - (b) ensure that the immediate work area is cleared of objects, materials and equipment other than that required to do the work, and
 - (c) ensure that windows, doorways and all other openings are adequately secured to prevent the release of asbestos fibre into other work areas.
- (2) **The employer must post signs at the boundaries of the designated work area indicating asbestos work is in progress, the hazards, and the precautions required for entering the work area.**
- (3) The employer must restrict entry into the designated work area to authorized persons who are adequately protected against the level of risk within the designated work area.

In light of that, my question to you is, who is ultimately responsible during the refit period or otherwise to ensure the safety of the crew and subcontractors by providing the necessary engineering controls, (IE – signage, PPE, training etc), for the ship?

Regards,

Project Manager,
Quality Control, Occupational Health and Safety
Ultrasonic Testing Representative

Canadian Maritime
Engineering

Canadian Maritime Engineering Ltd. West Coast Division
 854 Devonshire Rd. Victoria, BC, V9A 4T4

Cell: [REDACTED]
 Phone: (250) 475-3553
 Fax: (250) 590-0972
 Email: jim.drummond@cmelimited.com
 Website: www.cmelimited.com

CME is a division of the Russell Group of Companies www.russellindustries.com

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May-05-18 2:21 PM
To: CCGS-NGCC, Bartlett Captain
Subject: Re: ACM Console Work
Attachments: CCGS Bartlett - ACM Testing Follow-up

Follow Up Flag: Follow up
Flag Status: Flagged

Captain,

Explicit direction from Asbestos Consultants & direction has been as follows:

A). Re: Attached March 28, 2018 NWest Enviro Jen Taptuna "Telecon Summary & Notes" ACM Testing Follow-Up

2. Consoles:

- a. If cables are coated with an elastomeric coating, there will still be asbestos fibres in latent dust on inaccessible surfaces within the consoles, however, coating should help to reduce the amount of new fibres being released due to handling.
 - b. If a spray encapsulant is used, the space should be placed under negative pressure as it may cause a release of fibres. Spray must not be pointed at dusty surfaces and cables should be vacuumed first to remove loose material.
 - c. Cables are old – there may be issues with excessive handling/encapsulation.
 - d. Any console work will be moderate risk. Depending on the work activities, additional controls may be required (e.g. mini enclosure under negative pressure).
- ➔ Implying WorkSafe BC Notice of Project required to be filed, and (preferably) the procedure performed correctly under guidance of Asbestos Project supervisor, including asbestos air sampling during the project and Bridge Clearance Document (which includes receiving satisfactory end of project air monitoring results returned from lab before bridge can be repopulated with unprotected workers).

B). Refer to points 1 & 2 below:

From: [REDACTED]
Sent: January-31-18 3:35 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: Joel Shandro; Grant Rogers
Subject: Bartlett Wheelhouse Consoles Results

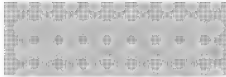
Hi Matt, please find attached the results for the dust samples collected in the Wheelhouse consoles. The concentration of the asbestos structures is high and the asbestos type is mixed (we usually don't see anthophyllite). It's not clear at this time what the source of the contamination is – I didn't see anything obvious during the testing. We suspect it's a result of pulling old cables throughout the years, however, they should be inspected more closely for other potential sources.

Recommendations:

1. Keep consoles closed and off limits. Should access be required, workers must wear, at minimum, a half-face respirator (and be clean shaven), disposable clothing, and gloves and HEPA vacuum the area around the work location (vacuum must be certified within the last year).
2. Have a qualified and trained asbestos abatement contractor clean the consoles (all of them) following moderate risk procedures (HEPA vacuum and wiping non-porous surfaces, wiping the cables should not be permitted). Carpets and other surfaces near console openings should likewise be cleaned.
3. Conduct air tests in the Wheelhouse to determine whether fibres have become airborne.
4. Inspect for other potential sources of contamination.

Please let me know if you have any questions.

Best,



North West Environmental Group Ltd.

C. [REDACTED] (Primary)

P. 250-384-9695 ext. [REDACTED] | F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC , V8T 2W1

Respectfully,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccg-s-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB



**North West
Environmental Group Ltd.**

201 – 415 Gorge Road East
Victoria BC V8T 2W1

Tel: 250-384-9695

Fax: 250-384-9865

e-mail: [REDACTED]

File No. 34741 P1 V1.0

Via Email

16 February 2018

**Matt Jackson
Canadian Coast Guard
25 Huron Street
Victoria, BC, V8V 4V9**

Attention: Matt Jackson, Chief Engineer

Re: Proposal for Background Asbestos Testing on the CCGS BARTLETT While at Sea

North West Environmental Group Ltd. (NWest) is pleased to present a proposal for background air testing throughout the Canadian Coast Guard (CCG) vessel Bartlett while it is at sea to identify evidence of the potential spread of asbestos fibres during normal operational activities. The Bartlett is currently alongside at 25 Huron Street in Victoria, BC and will undertake one day at sea to accommodate this testing.

Asbestos containing dust was found in the consoles of the Wheelhouse and behind the washing machines and dryers in the Laundry Room, and asbestos-containing products were found unprotected in the Machinery Control Room (MCR) Stores (rope gaskets) and in the console in the MCR (wiring). In addition, historic data shows that asbestos is present in Marinite panels, floor tiles, and other materials. The above identified areas were cleaned of dust and, where practicable, the bulk ACMs removed. As a result of these findings, NWest undertook vessel-wide air sampling to try to determine whether migration of asbestos fibres had occurred and to determine the airborne fibre concentrations. Sample results did not indicate an air quality issue at the time of sampling.

Vessel vibration and movement may cause increased fibre concentrations in air. Normal operations cannot be recreated while alongside, therefore, at sea testing is required to obtain a clearer understanding of air quality related to asbestos.

To reduce confounding factors, at sea sampling should occur in the same locations as sampling undertaken while alongside (see sampling plan below). At sea testing will determine the presence of fibers in air during normal operation. Samples will be initially analysed by NWest using phase contract microscopy (PCM) analysis. If any samples exceed threshold levels, they will be further analyzed by transmission electron microscopy (TEM) to characterize the fibres. If TEM is required, the earliest we could receive results will be Tuesday February 13, 2018.

Scope of Work

NWest will collect air samples on the vessel for one day while it undertakes maneuvers in the Victoria area similar to those it would take during normal operations. The ambient air sampling plan is summarized in the following table.



**North West
Environmental Group Ltd.**

Background Asbestos Testing At Sea
CCGS BARTLETT

NWest Project No. 34741
February 8, 2018

DECK	LOCATION	AMBIENT AIR SAMPLING
Above Tank Top	Control Room	1
Upper Deck	Alleyway (aft and fwd)	2 (1 each)
	Winchman's Cabin	1
	Alleyway Outside of Aft Oiler's Cabin	1
Poop Deck	Alleyway	1
	Logistic Officer's Cabin	1
	Lounge	1
Boat Deck	Alleyway	1
	Chief Officer's Cabin	1
Estimated totals		10 + 2 field blanks

Estimate

NWest will complete the above noted scope of work on a Time and Materials basis, estimated to be \$4130 taxes not included. Estimated overtime required to meet the project schedule is included as straight time. A breakdown of budget estimate is as follows.

ITEM	TASK	UNITS (ESTIMATE)	RATE	EXTENTION
1	Technologist: attend vessel, site work, sample prep, reporting. Includes estimated overtime as straight time.	13 hours		
2	Lab Technician: Overtime to analyze rush samples Friday night or Saturday. Overtime shown as straight time.	4 hours		
3	Project Manager: project design, coordination	2 hours		
4	Senior Project Manager: review, consultation	1 hour		
5	Principal in Charge or Certified Industrial Hygienist: review, consultation	2 hours		
6	Sample Analysis: Ambient Air at PCM level (all samples first analysed at PCM). Engine Room sample added partway through sampling period. Should site conditions warrant additional samples to prevent overloading, they will be charged at a reduced rate	13 samples		
7	Disbursements (shipping and handling)	1		
ESTIMATED TOTAL, taxes extra				\$2455

Limitations

The following limitations apply:



North West
Environmental Group Ltd.

Background Asbestos Testing At Sea
CCGS BARTLETT

NWest Project No. 34741
February 8, 2018

1. NWest requires safe access to compartments.
2. NWest requires access to electrical outlets to run air monitoring pumps.
3. NWest is not responsible for costs incurred due to delays in shipping, travel, or delivery of analytical results from laboratories. Additional costs are the responsibility of the client.
4. Mileage fees are waived.
5. PCM testing may not be able to determine the source of asbestos contamination, but rather, will be able to determine whether contamination exists.

NOTE 1: CCG should attempt to sample during worst case scenarios as these conditions usually result in greater levels of vessel vibration.

Insurance


NWest carries \$5 million Liability, \$5 million Pollution Liability and \$5 million Errors and Omissions Insurance.

Our WorkSafeBC number is 436736.

Closure

We hope this information is helpful to you and we look forward to working with you.

Yours truly,



Project Manager



North West
Environmental Group Ltd.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May 5, 2018 9:56 AM
To: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: Partial Record of Bartlett Asbestos Testing
Attachments: Partial Record of Bartlett Asbestos Testing.docx

FYI. A brief summary of ACM (and hazmat) issues from alternate perspective.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

Summary of most significant Bartlett Asbestos Testing
& Inconsistent Application of Remedial Action 5.05.2018

→ Making it appear that we are following reasonable & responsible practices

- Reference for TEM Dust Swipes: 10,000 – 100,000 structures/cm2 = "Medium Range"

1. Laundry Room TEM – Behind Washer: 14,800 s/cm2 - Laundry Rm cordoned off with Caution Barrier Tape & Professionals contracted to remediate.
 2. Engine Room TEM – Behind Wellxtrol Tk: 55,500 s/cm2 - Nothing done to remediate
 3. Engine Room TEM – Top of MCR Console: 28,000 s/cm2 - Dust wipe cleaned up without fanfare
 4. Wheelhouse Fire Panel Console Aft TEM: 9,990,000 s/cm2 – Professionally Remediated immediately, but no retesting, (therefore we must only presume that asbestos dust level is probably lower than 9,990,000 s/cm2). Retesting results will no doubt vary, depending on whether we sample from a dusty area or a relatively clean area.
 5. W/H Stb'd Wing Console TEM: 370,000 s/cm2 - Professionally Remediated immediately, and no re-testing.
- Note: TEM not performed on 3 other Bridge Consoles, (Center, Port Wings, Chart Table), nor MCR Console, -->but all consoles (and Bridge Void Space) are assumed to contain unsafe levels of asbestos.
6. ACM Wiring discovered:
 - a) W/H Fire Detection Panel: But ACM (Asbestos Containing Material) is not the outer insulation jacket, but rather the thin insulating strands twisted in-between the individual rubber-insulated conductors → (non-friable and negligible risk – in my opinion). It is incorrectly assumed, (in my opinion), that this is the cause of the cause / source of ACM dust in console).
 - b) MCR Console: Redundant Pyrometer Wiring → removed, then console professionally cleaned.
 7. Other recent asbestos detected:
 - a) MCR Stores – "Rope Gasket" / Pump Gland Packing → Discarded as ACM Waste
 - b) Engine Room – Wiring, Black
 - c) WH Fire Detection Console Panel – Wiring, Black
 8. Previous significant asbestos & hazardous materials findings:
 - a) ACM Gasket – 70% ACM
 - b) Lead Paint: Winch compartment Bulkhead & Piping. White Paint on save-all below Waste Oil Tank.
 - c) AMS: Steam Pipe Insulation: 10% ACM.
 - d) Upper Deck Stb'd: Floor Tile: 3% ACM
 - e) Upper Deck Stb'd: Deck Screed 0.5% ACM

Ross McKenzie
Bartlett Chief

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>
Sent: May-08-18 3:20 PM
To: McMillan Cody; CCGS-NGCC, Bartlett Chief Engineer
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer
Subject: RE: 6 Areas or 6 Levels of ACM Testing Required

Team,

I have discussed this impasse with George Koherst, who initially identified some of the containing wires and has significant electrical experience onboard the Bartlett.

He would be willing and able to identify (with the help of NWE) and tag the suspect materials within the consoles this refit period allowing us to specify for contract in December. The work has to be biddable and this is the only way I believe we can get it into that form. Koherst did mention a new form of encapsulation that I had not considered before which is re-sheathing the old wires with heat-shrink rather than spraying a polymer into the consoles. I would rather proceed to remediation than to encapsulation if possible.

In order for him to be able to take on that job he must first have the asbestos training. It has requested (by you) for the training unit to save seats for our necessary contractors but no one has sanctioned this as yet. I have spoken with the Patricia from the training unit and am expecting a response soon from Rita as to whether we can invite contractors to our training or not. If we do get agreement then it may be wise to displace someone from the scheduled course on the 17th and 18th of this month. Apparently the course is at capacity and consists of 8 Bartlett crew and two others.

Cody and I are meeting with LouiseAnne in the morning regarding the asbestos remediation, testing, concerns, the CCR and 'Scott's' plan. Though the refit budget this year is higher than it has ever been, there remain significant budget restrictions due to... the Laurier of course.

I will provide a summary following the discussion tomorrow.

I have no intention of limiting testing or cleaning as required. Potentially encapsulation can be an effective way of kicking the can down the road. It is the remediation that is the concern and cannot be attempted outside of contract; the high end can of worms, so to speak.

Regards,

Gabriel Chaikin
Marine Engineering | Ingénierie navale
(250) 363-0228

From: McMillan, Cody
Sent: 2018-May-08 2:31 PM
To: CCGS-NGCC, Bartlett Chief Engineer; Chaikin, Gabriel
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer
Subject: RE: 6 Areas or 6 Levels of ACM Testing Required

My \$0.02 on the whole asbestos issue here. The cost to remediate the bridge panels will likely be in the neighborhood of \$100k as Ross has already pointed out at approx.. \$50k per console, assuming there are no work arising that increase this. It cost us close to \$10k just to wipe them "clean" and we still haven't identified the exact source of it in the consoles. Asbestos remediation is very difficult to write a proper statement of work for contracting, almost impossible to have it tangible and biddable without a massive pre work assessment, it's not good enough to just write in to re wire the console, there needs to be start and stop points, wire identification, system identification, test procedures for all affected equipment after the re wiring ect. Likely a complete engineering package in itself. If re wiring is required we will have to put a tender to have someone engineer and spec it, and then another tender to actually do the work.

I would suggest that this refit period efforts be spent on identifying the exact source of the asbestos in the console, and the other places that Ross has mentioned within the ship, and where we can encapsulate and clearly mark the affected wires and equipment for proper remediation in the future. If it is some wire that is causing the issue in the consoles and we can encapsulate it we could likely make the consoles safe for entry again without special requirements, if it is from past panels as suggested we can hopefully clear the consoles without having to rewire completely.

s.16(2)

Cody McMillan
Marine Engineering | Ingénierie navale
(250) 363-8533

s.21(1)(b)

From: CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca>
Sent: May-08-18 1:25 PM
To: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>
Cc: McMillan, Cody <cody.mcmillan@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Captain <BartlettCO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Senior Engineer <BartlettSE@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Logistics Officer <BartlettLO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Engine Room <BartlettER@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Chief Officer <BartlettCHO@ccgs-ngcc.gc.ca>
Subject: FW: 6 Areas or 6 Levels of ACM Testing Required

Gabe,

We should probably have an asbestos meeting or conference call prior to Pre-Refit Asbestos and Hazardous Materials Assessments. You may want to include Red Crew Captain and (2) Red Crew Chiefs. Because we are on program and busy, I do not see a conference call working. As much as I am adverse to spending 4-8 hrs discussing these issues on the day before Crew Change, (may 15th AM), there may not be another viable alternative.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May-05-18 6:49 PM
To: CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Chief Officer
Subject: 6 Areas or 6 Levels of ACM Testing Required

Capt,

Draft of Extensive ACM Testing required – attached,

In addition to previous document → all fodder for a very very long discussion, (maybe a 2 day “Summit” would be more appropriate), unless perhaps I send a meeting “Agenda” ahead of time, and have all interested parties submit their own responses, or at least have their responses prepared.

Respectfully,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May-09-18 1:26 PM
To: Chaikin Gabriel
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Logistics Officer
Subject: RE: Refit Contracts - Contractors - Re: HVAC & Galley Range Ventilation Duct Cleaning + Range Hood Controller upgrade

Importance: High

That's great Gabe,

Please let me know when we've arranged tentative dates.

What do you think about Thu-Fri. May 24th & 25th for Galley Range Hood Controller upgrade, (Emery – Ly) and Mon-Tues May 28th-29th-30th for Galley & HVAC Trunking Cleaning (Superior) → providing that gives us some time to receive TEM Dust Swipe ACM test results, (I'll confirm lead time with NWest).

Note that in both of those Galley jobs, we should be able to perform the required work without shutting down galley for more than 2 days.

Interesting about CME and LDV watchdog, esp considering that we gave them 3 "consecutive" \$9.5 K orders for Cu-Ni Piping. And I agree that in keeping with the spirit-intent of the LDV ruling, we should try to spread the work around, especially locally, (at least to the guys that deserve the work), and so far, we really like CMEs quality of work.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]
Sent: May-09-18 12:56 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: RE: Refit Contracts - Contractors - Re: HVAC & Galley Range Ventilation Duct Cleaning + Range Hood Controller upgrade

Ross,

I'll contact Superior and see if I can book them for both duct cleaning jobs. I'll see if they can come in early in the refit for the galley and later for the ducting once we have the sample data.

For the range hood I think we should ask [REDACTED] to do the install because he does great work and is nice to have around. Plus Koho will have other work onboard. CME has previously 'threatened' that we don't share our 10k LDV contacts around as freely as they believe we should. Meaning of course that they want more of them. I think it would be best to show

that we do in fact hire many different companies as we require. For this reason especially I am glad that Koho is a regular on the Bartlett. Generally I hire Emery for all electrical work. That's for good reason though.

Regards,

Gabriel Chaikin
Marine Engineering | Ingénierie navale
(250) 363-0228

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: 2018-May-09 10:16 AM

To: Chaikin, Gabriel

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer

Subject: FW: Refit Contracts - Contractors - Re: HVAC & Galley Range Ventilation Duct Cleaning + Range Hood Controller upgrade

Importance: High

Gabe,

Re: Scheduling of:

1. Galley Exhaust Fan Ducting Cleaning, and
2. Gaylord Galley Range Hood Washdown System Controller Upgrade

Health Canada is already booked for June 11 & 12, so duct cleaning will need to be done before then.

1. E-49 Galley Exhaust Fan Ducting Cleaning. I can book Superior for this if you wish. I could book them for HVAC cleaning too, (although we've not previously used them), although as previously stated, the job would be complicated hugely if airborne asbestos or ACM TEM Swipe was found positive above deckhead panel.
2. EL-27 Gaylord Galley Range Hood Washdown System Controller Upgrade. As previously discussed, I could ask if he wanted this job or whether he'd want to give it to George.

Regards.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: May-08-18 12:58 PM

To: Chaikin Gabriel

Cc: CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer

Subject: FW: Refit Contracts - Contractors - Re: HVAC & Galley Range Ventilation Duct Cleaning

Importance: High

Gabe,

Following up on previous email, (preferring to only address one main issue per email), of wanting to schedule duct cleaning for Refit period rather than Self Maintenance period, are you OK with me scheduling Galley Exhaust Fan Ducting cleaning with Superior, (will entail shutting down Galley for full day).

..... as well as HVAC cleaning. Note Re: HVAC, we may run into a problem with not being able to remove deckhead panels without running into asbestos, (but we have no evidence that that will be case), and that would be a huge problem, as cleaning ducting without removing end of line unit electric heaters cold be difficult, yet to not clean the ducting at all would be an OHS concern.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: April-23-18 1:33 PM
To: Chaikin Gabriel
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Logistics Officer
Subject: RE: Refit Contracts - Contractors - incl HVAC

Gabe. We're on the same page. Superior steam/chem cleaned Galley ducting last year, so they already know what they're up against. They sent a full team for it, and it took them 12 hours, and ship's crew took care of having the fan motor removed & reinstalled before & after their cleaning.

I'm not sure who we normally use for duct cleaning, (we don't have a JetVac card, nor anyone else's that I can find), although superior can do that job too. I was hoping that contractor could do a before & after video or pictures of ducting. Although I would like NWest to check for mold before cleaning, and they should dust swipe recirc intake for asbestos before blowing that back into ship.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [<mailto:Gabriel.Chaikin@dfo-mpo.gc.ca>]
Sent: April-23-18 11:04 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer
Subject: RE: Refit Contracts - Contractors - incl HVAC

Ross,

This last year [REDACTED] We decided to call in Superior as they were the local company that does galley steam cleaning. They are an expensive company but

thorough. The way we found to work with them was to have them quote separately for the galley and for the accommodation. That wont be enough for what you have planned. Let me know what you think. If you like we can give them the heads up and have their estimator in when you dock.


Sales and Marketing Manager:

Superior Steam & Vac Ltd, www.supersteamteam.ca

Victoria JetVac Power Vac Ltd, www.jetvacpowervac.com

SRS, www.srsinterceptor.com

250-744-8884 Ext 1

Fax: [1-888-596-5591](tel:1-888-596-5591)

Victoria JetVac PowerVac Ltd. 250.652.2162

Regards,
Gabriel Chaikin
Marine Engineering | Ingénierie navale
(250) 363-0228

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: 2018-April-22 1:11 PM

To: Chaikin, Gabriel

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer

Subject: FW: Refit Contracts - Contractors - incl HVAC


Importance: High

Gabe,

Please note that I added another important service to be scheduled:

21. Job # E-49 HVAC Ducting & Cleaning & Inspection. Best if contractor performs before & after photos & video, and includes testing for mold (NWest) & ACM (NWest) prior to cleaning. Pay special attention to the steam / solvent cleaning of Galley Range ducting.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: 
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: April-22-18 10:48 AM

To: CCGS-NGCC, Bartlett Captain

Cc: Chaikin Gabriel

Subject: FW: Refit Contracts - Contractors

Importance: High

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: April-20-18 6:38 PM

To: Chaikin Gabriel

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer

Subject: Refit Contracts - Contractors

Importance: High

Gabe,

Here's a list of most significant outstanding Contracts to schedule: (Note that the ship will want to schedule the dates for the first 8 contracts)

1. Periodic (Annual) Safety Inspection. Deck & ER. 2 days.
2. ... + Fire & Boat Drills
3. Load Line Inspec.
4. Fire Detection System (after Notifier Panel has been relocated). We should get Vikings approval for "insert" (which may not allow sufficient cooling air flow).
5. Fixed Fire-Fighting systems Insp (+ portables)
6. Sprinkler Syst Annual
7. RPBA / Backflow Preventer Service
8. Health Canada
9. ACM Pre-Testing (NWest Enviro). Meeting required between Captain, Chief Eng, RDPA, Maint Manager & NWest Consultant to establish objectives (her request).

1. ACM Pre-Testing (NWest Enviro). Meeting required between Captain, Chief Eng, RDPA, Maint Manager & NWest Consultant to establish objectives (her request).
 - Windlass Brake Bands
 - Bridge Console Dust Swipes (to determine if previous attempts at abatement were at all effective)
 - Wiring within other of ship's panels? (Megger Survey)
 - Job # E-49 HVAC Ducting for mold (NWest) & ACM (NWest) prior to cleaning.
2. Dust sampling above deckhead panels, particularly in accommodation (and air sampling in Supply Officer's Office over 12 hour duration - where above deckhead space is open to the office).
3. Dust sampling above wireways, both above deckhead panels and open wireways in Engine Room and throughout the ship.
4. Electronics / Radio Room
5. Gym
6. More testing while underway in rough water conditions in work spaces and cabins, over a 12 hour operational time interval, (and preferably after a 12 hour operational period - and preferably in rough seas), in particular aft Oilers cabin (where ACM fiber count was previously measured high) & Supply Officers cabins, and in "Upper Deck" spaces where less of the ACM bulkhead panels have been removed - more vibration & ship flexing of ACM bulkheads chafing-rubbing.
7. Air sampling in Cadets Penthouse (Deckhead panels open to area above.)
8. Dust swap in Bridge Fire Panel console.
9. Air sampling on bridge (no fresh air to supplement / dilute results)

10. More wiring & pump & valve packing materials – ask asking if there is truly any significant risk is cutting these materials with sharp tools.
10. NWest Enviro: ACM work consultant to oversee ACM work, including Notifier Fire Panel Relocation & other work, depending on results of pre-test Hazardous Material Assessments.
11. Finning – Cody
12. United Engineering. Port Hole repairs (D-01 & D-02). Not an easy job, but Jeff did a great job on Senior's Cabin last year.
13. D-06 Nav Light Shroud Repairs. United Eng?
14. D-28 & D-04b Supply Officer's Cabin Upgrade. Pronautic?
15. E-60 Fuel Meters. What is involved in this project? And who is doing it?
16. VP Systems
- E-06 Allied Crane Servicing.
 - Annual Service (Capt.Shuckburg says he wants it maintained to mfg standards – which includes annual overhaul of winch – although Randy / Laurier & I / Bartlett have been overhauling it on 5 year basis due to low running hours – but brake did fail last patrol).
 - Winch Overhaul – At least Brake replacement.
 - Selector Valve Replacement.
17. E-11 Aft Capstan Overhaul – 5 year survey
18. E-12 Aft Deck Powerpack – 5 Year Survey. 2 Pumps & 2 Motors (latter for Emery)
19. Emery Electric.
- E-50 Accomodation Vent Fan & Motor Service
 - Additional vent fan(s) according to scheduled servicing list
 - *** EL-27 – Galley Exhaust Range Hood Controls Replacement & Upgrade (repairing shutting down of galley for at least 1 full day). New equipment in Depot 21
 - E-12 Aft Deck PowerPack Motor x 2 Service
20. KOHO Electrical.
- EL-01, R-60, EI-20, EL-18 Cable Transit. None identified for testing, but estimated 75% remain unchecked.
 - EL-03 Transformer Service (Follow up to previous Refit)
 - EL-05 UPS 1&2 Annual Service
 - *** EI-26 Ships Wiring Condition Assessment (follow-up to previous Refit) – Crucial for Ship Condition Survey
21. Job # E-49 HVAC Ducting & Cleaning & Inspection. Best if contractor performs before & after photos & video, and includes testing for mold (NWest) & ACM (NWest) prior to cleaning. Pay special attention to the steam / solvent cleaning of Galley Range ducting.
22. Others / Misc; Hermont (OWS OCM), Island Temp (Refrigeration Leak Checks), etc.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccg-sngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May 14, 2018 1:10 PM
To: [REDACTED]
Cc: CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Senior Engineer
Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - Ma15th at VCGB

Good Day [REDACTED]

Yes. That will probably be me, but Senior or other engineer may be able to step in, except that only Gord & myself have had previous asbestos experience. ☺

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: May-14-18 11:11 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse
Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Thank you Ross,
I am developing a work plan for this project.
Just wanted to ensure that someone familiar with the refit work will be available tomorrow to work with [REDACTED] on identifying specific sampling locations.



[REDACTED]
Senior Project Manager
North West Environmental Group Ltd.
C. [REDACTED]

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]
Sent: Friday, May 11, 2018 3:37 PM
To: [REDACTED]
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse
Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB
Importance: High

Hi [REDACTED]. Many thanks for elaboration. Please see embedded comments.

Have a great weekend.

Ross McKenzie
Chief Engineer, CCGS Bartlett

Cell: [REDACTED]
BartlettCE@bar.ccg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: May-11-18 2:38 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin Gabriel
Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Hi Ross,

Our approach to accessing the panels would be to have a HEPA vacuum present, carefully open the access door/panel and insert the vacuum nozzle into the console to generate minor negative pressure. Personnel accessing the console would be using PPE including a half-face respirator and disposable coveralls and other personnel not directly involved in the access should be kept out of the area. Be prepared to clean (HEPA vacuum and wipe) the access door/panel prior to closing up.

If it is federal personnel conducting this activity, than an NOP is not required.

If the work is sub-contracted than the contractors would fall under WorkSafeBC and an NOP would be filed.

Air monitoring would not be required for this activity.

As far as the refit testing work we have a few preliminary questions in red below:

1. Windlass Brake Bands. X2
2. Fire Main Insulation – various & many locations.
3. Watertight Doors (sample highest concerns of 5 doors) What part of the door is to be tested (gasket, door interior, paint, etc.)?

Either I can leave that to you or [REDACTED] to point out something I may have missed as part of the Hazardous Materials Assessment, (presuming I am correct that a HMA is required for jobs that we are assigning to a contractor on our premises), or we can look at the 5 doors and simply do a TEM Swipe. There will be ACM bulkhead concerns regarding the 2 Upper Deck Accommodation Doors, and perhaps duct seal/putty & transit sealant if that is a concern. RM.

Other areas of Primary concern for us to sub-contract work:

1. Bridge Fire Panel Consoles x5 + MCR Console – TEM Swipe.
2. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway. Are these wipe samples as well? **Yes. RM.**
3. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels. Asbestos TEM Swipe
4. Re: HVAC Ducting. TEM Swipe and Mold Swipe after Air conditioning has been running for a week. After a week in refit? **Yes, weather permitting. The fan room can flood with condensation in the summer if the fan room ducting drain gets plugged, and the main deck "Poop Deck" electric heaters tend to ground 100% after AC's been running for a while (ie the electric "insulators" at the electric heater junction points absorb so much water that the hull becomes part of the electric circuit as much as the wires. And my concern here is that there is a risk of mold when that is happening. RM.**
5. Port Holes – test 2 of many if necessary – we know that older marinite bulkheads are 95% asbestos What is being impacted? Asbestos and/or lead? Anti-sweat paint, window putty, bulkhead panels, bulkhead insulation? **Probably no testing and no HMA are required here. Laundry Room bulkhead is known ACM, but Cabin U-26 (aft of fountain on Upper Deck) bulkhead is non-ACM. Removing bulkhead lining should not be required, but may be worth a look for HMA. I think that a Lead Paint test would be required at least. RM.**

6. Engine Room – behind Well-X-Trol tanks Wipes or bulk samples? Asbestos and/or lead? If bulk samples what material is to be tested? This is mostly a follow-up to TEM Swipe to follow up on the previous 13,000 s/cm2 TEM Swipe Jen & Matt did in Jan./Feb.2018. Presumably it got remediated at the time, but Jen said that she should follow up on it when ship returns to Victoria, (at least to attempt to determine source of ACM). RM.



[REDACTED]
Senior Project Manager
North West Environmental Group Ltd.
C. [REDACTED]

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 1:44 PM

To: [REDACTED]

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin Gabriel

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Thank You [REDACTED]

Yes, it looks like we'll have to. There is a lot of testing to do.

Based on our understanding of ACM Protocol and our procedures for accessing the Electronic Consoles, I am of the understanding that even opening the doors constitutes Level 2 Asbestos Work and a Notice of Project. Will Air Clearance testing be required? and more importantly will we lose access to the areas where we have known asbestos until clear air sample results are obtained? (ie Bridge & MCR).

Many Thanks,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]

Sent: May-11-18 1:33 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15t at VCGB

Thank you Ross,

We will definitely get done what we can on Tuesday. However, if we are unable to complete all of the items is there opportunity to return to finish at a later date (Wednesday for instance)?



[REDACTED]
Senior Project Manager
North West Environmental Group Ltd.
C. [REDACTED]

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 11:26 AM

To: [REDACTED]

Cc: CCGS-NGCC, Bartlett Captain; Chaikin Gabriel; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Engine Room

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15t at VCGB

Importance: High

Good Morning [REDACTED]

Thanks for asking. I should have been more direct with my working.

My intention was to test all items on the list, including:

Other areas of secondary concern as follow-up:

1. Electronics Room
2. Gym
3. MCR
4. Wireways – Alleyways above deckhead panels and engineroom
5. Logistics Officer Office & Cabin (in vicinity of openings to over deckhead), Aft Oilers cabin.
6. Upper Deck Alleyway, aft – where open to area above cabin deckhead space.

Logic-Reasoning:

1. Electronics Room – If all of the Electronic consoles are being deemed asbestos hazards, then it is logical to TEM Swipe the "Electronics Room" / "Radio Room".
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6. Upper Deck Alleyway, aft – where open to area above cabin deckhead space. We all suspect that area above deckhead panels are the likely source of ACM. This particular alleyway area is open to space above deckhead panels.

Regards,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: May-11-18 10:44 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer
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I have scheduled [REDACTED] to attend the vessel on May 15, to address the items below.

He is available late morning.

Is the goal to address all of the primary concerns on May 15 as follows?:

1. Windlass Brake Bands. X2
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3. Watertight Doors (sample highest concerns of 5 doors)

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3. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels. Asbestos TEM Swipe
4. Re: HVAC Ducting. TEM Swipe and Mold Swipe after Air conditioning has been running for a week.
5. Port Holes – test 2 of many if necessary – we know that older marinite bulkheads are 95% asbestos
6. Engine Room – behind Well-X-Trol tanks



[REDACTED]
Senior Project Manager
North West Environmental Group Ltd.
 C. [REDACTED]

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]
Sent: Thursday, May 10, 2018 4:23 PM
To: [REDACTED]
Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer
Subject: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB
Importance: High

Good Day [REDACTED]

Could a Hazardous Materials Assessment Consultant-Tester be available please on CCGS Bartlett at Victoria CG Base on Tuesday May 15th for Pre-Refit Testing.

Note that "Refit" period is scheduled for May 16th – June 27th.

Note also to please discuss with Gabe. I am acting on Gabe's authority, but he may have not expected that I would include areas of concern outside of Refit contracts.

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I think that for 1 day, this would be a good start, and Matt can carry on from here.

Respectfully,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsgc.gc.ca
BartlettChief@gmail.com for files above 5 MB

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: Assamoi Assi [REDACTED]
Sent: May 15, 2018 7:19 PM
To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Engine Room
Subject: Fwd: Asbestos Abatement - please note more changes to itinerary

Hi Trish,

Thank you for your email.

I will be present to the training, but I would probably leave earlier

On May 7, 2018, at 11:58 AM, McLaren, Patricia <Patricia.McLaren@dfo-mpo.gc.ca> wrote:

Hi Assamoi,

I'm sorry to have to send you yet another email with changes to the Asbestos Abatement itinerary, but here it is:

New start and end times:

Thursday, May 17: **0830 – 1500**

Friday, May 18: **0830 – 1630** (there is a chance you may be able to leave a little early if you have to make a flight that evening)

Course location remains to be the WorkBC Boardroom at 102-415 Gorge Rd, Victoria

Sorry about all the changes!

We've also been thinking about the commute. Julie Hagedorn may be in touch with you shortly to discuss carpooling options since the course is across town.

Cheers,

Trish McLaren
IBMS Training Unit
Canadian Coast Guard | Garde Côtière Canadienne
25 Huron Street | 25 rue Huron
Victoria, BC
Canada, V8V 4V9
telephone | téléphone : 250-480-2952
email | courriel : Patricia.McLaren@dfo-mpo.gc.ca

9. Electronics Room
10. Gym
11. MCR
12. Wireways – Alleyways above deckhead panels and engineroom
13. Logistics Officer Office & Cabin (in vicinity of openings to over deckhead), Aft Oilers cabin.
14. Upper Deck Alleyway, aft – where open to area above cabin deckhead space.

Thanks You,

Ross McKenzie
 Chief Engineer, CCGS Bartlett
 Cell: [REDACTED]
BartlettCE@bar.ccgs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: May-15-18 12:41 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse; [REDACTED]
Subject: FW: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Hi again Ross,
 In addition to the nine items below, we will also:

10. TEM wipe sample dust deposits in the electronics room
11. TEM wipe sample dust deposits in the gym
12. TEM wipe sample dust deposits atop the MCR console
13. TEM wipe sample wireways in the alleyways above deckhead panels and in the engine room focusing on suspect ACM dust trapped in the weave of the wires versus the wires themselves.

In a previous correspondence you make reference to an air test in the Aft Oiler's Cabin that was bad. I had a look at some recent data that showed good results so please let me know if I am missing something here.
 Thank you



[REDACTED]
Senior Project Manager
North West Environmental Group Ltd.
 C. [REDACTED]

From: [REDACTED]
Sent: Tuesday, May 15, 2018 12:21 PM
To: 'CCGS-NGCC, Bartlett Chief Engineer'
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse; [REDACTED]
Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Hi Ross,
 I won't dispatch Shaun until I hear from you.

Please review the initial work plan below and let me know if it requires modification:

1. Windlass Brake Bands, 2 bulk asbestos samples – (Clutch was mentioned in a previous correspondence so please confirm whether it is to be impacted).
2. Fire Main Insulation, bulk asbestos sampling – Various locations.
3. Watertight Doors, 5 doors of highest concern – Sampling will depend on anticipated refit work. Sampling may include gasket/putty (not sure about aforementioned TEM sampling on the doors)
4. Bridge Fire Panel Consoles (5) + MCR Console – TEM Wipe sampling (within the consoles).
5. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway – TEM Wipe
6. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels - TEM Wipe (Do we want to coordinate this sampling in conjunction with the mold sampling after a week of air conditioning in refit.
7. Re: HVAC Ducting. Mold wipe after Air conditioning has been running for a week.
8. Port Holes – test 2 of many if necessary – Lead paint sampling
9. Engine Room – behind Well-X-Trol tanks – TEM wipe sampling



Senior Project Manager
North West Environmental Group Ltd.

C.

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 3:37 PM

To:

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Importance: High

Hi Many thanks for elaboration. Please see embedded comments.

Have a great weekend.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgsg-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: May-11-18 2:38 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin Gabriel

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Hi Ross,

Our approach to accessing the panels would be to have a HEPA vacuum present, carefully open the access door/panel and insert the vacuum nozzle into the console to generate minor negative pressure. Personnel accessing the console would be using PPE including a half-face respirator and disposable coveralls and other personnel not directly involved in the access should be kept out of the area. Be prepared to clean (HEPA vacuum and wipe) the access door/panel prior to closing up.

If it is federal personnel conducting this activity, than an NOP is not required.

If the work is sub-contracted than the contractors would fall under WorkSafeBC and an NOP would be filed.

Air monitoring would not be required for this activity.

As far as the refit testing work we have a few preliminary questions in red below:

1. Windlass Brake Bands. X2
2. Fire Main Insulation – various & many locations.
3. Watertight Doors (sample highest concerns of 5 doors) What part of the door is to be tested (gasket, door interior, paint, etc.)?

Either I can leave that to you or [REDACTED] to point out something I may have missed as part of the Hazardous Materials Assessment, (presuming I am correct that a HMA is required for jobs that we are assigning to a contractor on our premises), or we can look at the 5 doors and simply do a TEM Swipe. There will be ACM bulkhead concerns regarding the 2 Upper Deck Accommodation Doors, and perhaps duct seal/putty & transit sealant if that is a concern. RM.

Other areas of Primary concern for us to sub-contract work:

1. Bridge Fire Panel Consoles x5 + MCR Console – TEM Swipe.
2. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway. Are these wipe samples as well? **Yes. RM.**
3. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels. Asbestos TEM Swipe
4. Re: HVAC Ducting. TEM Swipe and Mold Swipe after Air conditioning has been running for a week. After a week in refit? **Yes, weather permitting. The fan room can flood with condensation in the summer if the fan room ducting drain gets plugged, and the main deck "Poop Deck" electric heaters tend to ground 100% after AC's been running for a while (ie the electric "insulators" at the electric heater junction points absorb so much water that the hull becomes part of the electric circuit as much as the wires. And my concern here is that there is a risk of mold when that is happening. RM.**
5. Port Holes – test 2 of many if necessary – we know that older marinite bulkheads are 95% asbestos What is being impacted? Asbestos and/or lead? Anti-sweat paint, window putty, bulkhead panels, bulkhead insulation? **Probably no testing and no HMA are required here. Laundry Room bukhead is known ACM, but Cabin U-26 (aft of fountain on Upper Deck) bunkhead is non-ACM. Removing bulkhead lining should not be required, but may be worth a look for HMA. I think that a Lead Paint test would be required at least. RM.**
6. Engine Room – behind Well-X-Trol tanks Wipes or bulk samples? Asbestos and/or lead? If bulk samples what material is to be tested? **This is mostly a follow-up to TEM Swipe to follow up on the previous 13,000 s/cm2 TEM Swipe Jen & Matt did in Jan./Feb.2018. Presumably it got remediated at the time, but [REDACTED] said that she should follow up on it when ship returns to Victoria, (at least to attempt to determine source of ACM). RM.**



[REDACTED]
Senior Project Manager
North West Environmental Group Ltd.

C. [REDACTED]

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 1:44 PM

To: [REDACTED]

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin Gabriel

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

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Senior Project Manager

North West Environmental Group Ltd.

C. (Primary)

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Sent: Friday, May 11, 2018 11:26 AM

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Importance: High

Good Morning

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Senior Project Manager
North West Environmental Group Ltd.
C. [REDACTED]

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Sent: Thursday, May 10, 2018 4:23 PM

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Respectfully,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

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BartlettChief@gmail.com for files above 5 MB



**North West
Environmental Group Ltd.**

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1
Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: May 17, 2018

Client Job or PO#: NEED

Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-1b	Port Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	
35254-2b	Starboard Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-4b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Red Gasket	Red	100	None Detected	0	Non-Fibrous	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	



ATMA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-7b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Teal Gasket	Teal	100	None Detected	0	Non-Fibrous (70%) Cellulose (15%) Synthetic (15%)	100	
35254-8b Layer 1	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-8b Layer 2	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-9b	Main Engine Room (Fire Station 16)	May-17-2018	JD	Black Gasket	Black	100	None Detected	0	Cellulose (15%) Non-Fibrous (85%)	100	



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514632
Client No.:35254-13b

Location: Bridge-Fire Panel Console (Mid Port
Console)
Area (cm²): 100
Density (s/mm²): 1850

Concentration (s/cm²): 178000
Asbestos Type(s): Chrysotile Amosite

Lab No.:6514633
Client No.:35254-14b

Location: A.M.S. (Wireway Above Sewage
Tank)
Area (cm²): 50
Density (s/mm²): 231

Concentration (s/cm²): 222000
Asbestos Type(s): Chrysotile

Lab No.:6514634
Client No.:35254-15b

Location: M.E.R. (Wireway Adjacent To Escape
Hatch)
Area (cm²): 100
Density (s/mm²): 57.7

Concentration (s/cm²): 111000
Asbestos Type(s): Chrysotile Tremolite Amosite

Lab No.:6514635
Client No.:35254-16b

Location: Bridge-(Forward Port Console)
Area (cm²): 100
Density (s/mm²): 135

Concentration (s/cm²): 64800
Asbestos Type(s): Amosite Chrysotile

Lab No.:6514636
Client No.:35254-17b

Location: Bridge-(Forward Middle Console)
Area (cm²): 100
Density (s/mm²): 231

Concentration (s/cm²): 55500
Asbestos Type(s): Amosite Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature:
Analyst:



Approved By:

A handwritten signature in black ink, which appears to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

Page 1 of 6

000954



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514637 Client No.:35254-18b	Location: Bridge-(Forward Starboard Console) Area (cm ²): 100 Density (s/mm ²): <9.62	Concentration (s/cm ²): <9250 Asbestos Type(s): None Detected
Lab No.:6514638 Client No.:35254-19b	Location: Bridge-(Mid Starboard Console) Area (cm ²): 100 Density (s/mm ²): 115	Concentration (s/cm ²): 27800 Asbestos Type(s): Amosite Chrysotile
Lab No.:6514639 Client No.:35254-20b	Location: MCR-Console Area (cm ²): 100 Density (s/mm ²): 106	Concentration (s/cm ²): 17000 Asbestos Type(s): Chrysotile Amosite
Lab No.:6514640 Client No.:35254-21b	Location: MCR-Top Of Console Area (cm ²): 100 Density (s/mm ²): 67.3	Concentration (s/cm ²): 16200 Asbestos Type(s): Chrysotile
Lab No.:6514641 Client No.:35254-22b	Location: MCR-Port Side-Top Of Ducting Area (cm ²): 100 Density (s/mm ²): 28.8	Concentration (s/cm ²): 55500 Asbestos Type(s): Chrysotile Amosite
Lab No.:6514642 Client No.:35254-23b	Location: MCR-Port Side-Wireway Adjacent Switch Console Area (cm ²): 100 Density (s/mm ²): 67.3	Concentration (s/cm ²): 6480 Asbestos Type(s): Chrysotile
Lab No.:6514643 Client No.:35254-24b	Location: Upper D: Starboard Aft Alleyway- Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): 57.7	Concentration (s/cm ²): 27800 Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:29



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514644 Client No.:35254-25b	Location: Upper D: Stbd Aft Watertight Door-DH Cavity Area (cm ²): 100 Density (s/mm ²): 212	Concentration (s/cm ²): 204000 Asbestos Type(s): Chrysotile Amosite
Lab No.:6514645 Client No.:35254-26b	Location: Upper D: Aft Oilers Cabin-Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): 19.2	Concentration (s/cm ²): 37000 Asbestos Type(s): Chrysotile
Lab No.:6514646 Client No.:35254-27b	Location: Poop D: (P-2) Logistics Office-Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): <9.62	Concentration (s/cm ²): <4630 Asbestos Type(s): None Detected
Lab No.:6514647 Client No.:35254-28b	Location: N. Bridge D: (N-5) Cadet Cabin-Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): <9.62	Concentration (s/cm ²): <9250 Asbestos Type(s): None Detected
Lab No.:6514648 Client No.:35254-29b	Location: N. Bridge D: Bridge-Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): 67.3	Concentration (s/cm ²): 16200 Asbestos Type(s): Chrysotile Actinolite
Lab No.:6514649 Client No.:35254-30b	Location: M.E.R.-Aft Port (Metal Plate Beneath Wireway) Area (cm ²): 50 Density (s/mm ²): <9.62	Concentration (s/cm ²): <4630 Asbestos Type(s): None Detected
Lab No.:6514650 Client No.:35254-31b	Location: Gym-Top Of Electrical Cabinet Area (cm ²): 100 Density (s/mm ²): 86.5	Concentration (s/cm ²): 83300 Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature:
Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

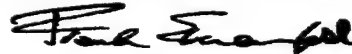
Lab No.:6514651
Client No.:35254-31

Location: Additional Sample Received
Area (cm²): 100
Density (s/mm²): 9.62

Concentration (s/cm²): 925
Asbestos Type(s): Actinolite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018
Signature: _____
Analyst: _____

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

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000957



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514632
Client No.: 35254-13b
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 2
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0260
Sensitivity (s/mm²): 38.5
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Bridge-Fire Panel Console (Mid Port Console)
Asbestos Structures: 48
Structures < 5 Microns: 44
Structures ≥ 5 μm: 4
Structure Density (s/mm²): 1850
Structure Concentration (s/cm²): 178000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <38.5
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID: 1:14:07PM

Lab No.: 6514633
Client No.: 35254-14b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 50
Location: A.M.S. (Wireway Above Sewage Tank)
Asbestos Structures: 24
Structures < 5 Microns: 22
Structures ≥ 5 μm: 2
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 222000
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

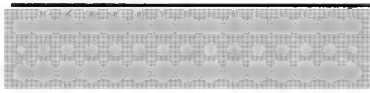
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31

Page 1 of 12

000960



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514634
Client No.: 35254-15b
Volume Filtered (mL): 0.25
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 18500

Area Sampled (cm²): 100
Location: M.E.R. (Wireway Adjacent To Escape Hatch)
Asbestos Structures: 6
Structures < 5 Microns: 3
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 57.7
Structure Concentration (s/cm²): 111000
Asbestos Type(s):
Chrysotile
Tremolite
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <18500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID: 2:17:13PM

Lab No.: 6514635
Client No.: 35254-16b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 100
Location: Bridge-(Forward Port Console)
Asbestos Structures: 14
Structures < 5 Microns: 12
Structures ≥ 5 µm: 2
Structure Density (s/mm²): 135
Structure Concentration (s/cm²): 64800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 22
Structure Density (s/mm²): 212
Structure Concentration (s/cm²): 102000
Non-Asbestos Type(s):
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

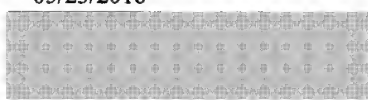
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31

Page 2 of 12

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514636
Client No.: 35254-17b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Bridge-(Forward Middle Console)
Asbestos Structures: 24
Structures < 5 Microns: 21
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 24
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 55500
Non-Asbestos Type(s):
SiAl - Other Fiber
SiMg - Talc

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld, III".

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31

Page 3 of 12

000962



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514637
Client No.: 35254-18b

Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Bridge-(Forward Starboard Console)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514638
Client No.: 35254-19b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Bridge-(Mid Starboard Console)

Asbestos Structures: 12

Structures < 5 Microns: 11
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 27800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31

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000963



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514639
Client No.: 35254-20b

Volume Filtered (mL): 3
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 1540

Area Sampled (cm²): 100
Location: MCR-Console

Asbestos Structures: 11

Structures < 5 Microns: 10
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 106
Structure Concentration (s/cm²): 17000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <1540
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514640
Client No.: 35254-21b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: MCR-Top Of Console

Asbestos Structures: 7

Structures < 5 Microns: 6
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 16200
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

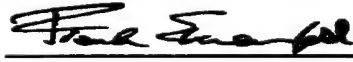
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature: _____
Analyst: _____

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director



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CERTIFICATE OF ANALYSIS


Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

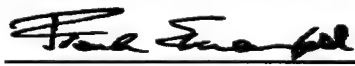
TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514641 Client No.: 35254-22b Volume Filtered (mL): 0.25 Dilution Factor (mL): 50 Grid Openings: 8 Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62 Detection Limit (s/cm²): 18500 Micrograph Number: EDXA Spectrum ID:	Area Sampled (cm²): 100 Location: MCR-Port Side-Top Of Ducting Asbestos Structures: 3 Structures < 5 Microns: 3 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <u>28.8</u> Structure Concentration (s/cm²): <u>55500</u> Asbestos Type(s): Chrysotile Amosite	Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45 Non-Asbestos Structures: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <18500 Non-Asbestos Type(s): None Detected
Lab No.: 6514642 Client No.: 35254-23b Volume Filtered (mL): 5 Dilution Factor (mL): 50 Grid Openings: 8 Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62 Detection Limit (s/cm²): 925 Micrograph Number: EDXA Spectrum ID:	Area Sampled (cm²): 100 Location: MCR-Port Side-Wireway Adjacent Switch Console Asbestos Structures: 7 Structures < 5 Microns: 4 Structures ≥ 5 µm: 3 Structure Density (s/mm²): <u>67.3</u> Structure Concentration (s/cm²): <u>6480</u> Asbestos Type(s): Chrysotile	Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45 Non-Asbestos Structures: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <925 Non-Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018
Signature: 
Analyst:

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514643
Client No.: 35254-24b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 100
Location: Upper D: Starboard Aft Alleyway-
Deckhead Cavity
Asbestos Structures: 6
Structures < 5 Microns: 5
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 57.7
Structure Concentration (s/cm²): 27800
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514644
Client No.: 35254-25b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Upper D: Stbd Aft Watertight Door-
DH Cavity
Asbestos Structures: 22
Structures < 5 Microns: 16
Structures ≥ 5 µm: 6
Structure Density (s/mm²): 212
Structure Concentration (s/cm²): 204000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31

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9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514645
Client No.: 35254-26b
Volume Filtered (mL): 0.25
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 18500

Area Sampled (cm²): 100
Location: Upper D: Aft Oilers Cabin-Deckhead
Cavity
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 37000
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <18500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514646
Client No.: 35254-27b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 100
Location: Poop D: (P-2) Logistics Office-
Deckhead Cavity
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514647
Client No.:35254-28b

Volume Filtered (mL):0.5
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):9250

Area Sampled (cm²):100
Location:N. Bridge D: (N-5) Cadet Cabin-Deckhead Cavity
Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6514648
Client No.:35254-29b

Volume Filtered (mL):2
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):2310

Area Sampled (cm²):100
Location:N. Bridge D: Bridge-Deckhead Cavity
Asbestos Structures: 7

Structures < 5 Microns: 6
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 16200
Asbestos Type(s):
Chrysotile
Actinolite

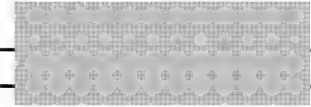

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature: 
Analyst: 

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514649
Client No.:35254-30b

Volume Filtered (mL):2
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):4630

Area Sampled (cm²):50
Location:M.E.R.-Aft Port (Metal Plate Beneath Wireway)
Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6514650
Client No.:35254-31b

Volume Filtered (mL):0.5
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):9250

Area Sampled (cm²):100
Location:Gym-Top Of Electrical Cabinet

Asbestos Structures: 9

Structures < 5 Microns: 9
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 86.5
Structure Concentration (s/cm²): 83300
Asbestos Type(s):
Chrysotile
Amosite

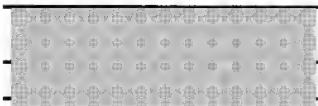
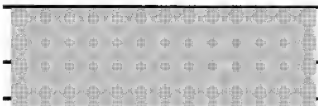
Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<9250
Non-Asbestos Type(s):
None Detected

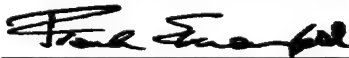
Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature: 
Analyst: 

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514651
Client No.: 35254-31

Area Sampled (cm²): 100
Location: Additional Sample Received

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 9.62
Structure Concentration (s/cm²): 925
Asbestos Type(s):
Actinolite

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

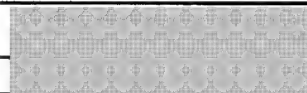
Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Client: NOR765

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6514792
Client No.: 35254-10b

Description: Red Paint On Metal
Location: Auxiliary Machine Space Watertight Door

Result (% by Weight): <0.0062
Result (ppm): <62
Comments:

Lab No.: 6514793
Client No.: 35254-11b

Description: White Paint On Metal
Location: Main Engine Rm Aft Bulkhead

Result (% by Weight): 0.96
Result (ppm): 9600
Comments:

Lab No.: 6514794
Client No.: 35254-12b

Description: Black Paint On Metal
Location: Port Windlass

Result (% by Weight): <0.0067
Result (ppm): <67
Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/21/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:37

Page 1 of 2

000972



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: [REDACTED]
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Paint
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- * Insufficient sample provided to perform QC reanalysis (<200 mg)
- ** Not enough sample provided to analyze (<50 mg)
- *** Matrix / substrate interference possible.

Ayres, Bob

From: Ayres, Bob
Sent: Tuesday, May 29, 2018 2:07 PM
To: Ormiston, Glenn; Jersch, Russell; Bennett, Bob; Wright, Edward; Chaikin, Gabriel; McNish, Joanne; CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca)
Cc: Carrigan, Kevin
Subject: FW: Bartlett Results
Attachments: 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1 V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

FYI, my note to Director of CGSS in HQ.
Bob

From: Ayres, Bob
Sent: May-29-18 1:45 PM
To: Richardson, Dena
Subject: FW: Bartlett Results

Hi Dena,
Just wanting to give you a heads up on the most recent development with the Bartlett and asbestos. FYI, the acting RD Fleet was also planning to notify HQ (DG Ops and perhaps others).

A note of history – the ship was built in 1969 and no doubt had extensive asbestos containing materials (ACM) used in her construction. Asbestos surveys over the years and abatement/remediation efforts have confirmed this.

Asbestos concerns were raised in early 2018 and documented on a series of IIRs, with a focus area being wiring in the bridge consoles that had not previously been identified as ACM. The ship is two weeks into a refit at Vic Base (with those bridge consoles being among the work) and additional tests were ordered a week ago with results back today.

As you will see by the email below there were both bulks samples and wipe tests. While the analysis of bulk samples came back as negative the dust wipe samples from a variety of locations came back as positive for ACM to varying degrees.

- The bulk tests were done on brake bands, insulations and gaskets and all came back as none detected.
- The wipe tests were done in a variety of wire-ways, deck-heads, cavities, and consoles and results ranged from none detected to high concentrations (as per below)

Shortly after this recent result became known the ME personnel notified the ship, myself and Fleet Management. We met and discussed actions, which included;

- the stop of any work with potential to disturb ACM (this includes refit work with contractors)
- ME has arranged for environmental specialist consultants to attend the ship tomorrow for further review, assessment and determination of a way forward
- The Bartlett CO, acting RD Fleet and myself met with all Bartlett crew immediately following the meeting to present the news to crew and take any questions – there were some questions but the crew appeared to take it in stride, with the understanding that we should know more tomorrow and in the days following.

Important to note is that air tests were conducted throughout the ship, including underway, after the findings earlier this year and all came back as negative.

There is supposition that the dust sampled in this most recent testing has been present since the time of earlier remediation efforts (perhaps going back decades). I feel this is probable but it is also important to note that some dust with ACM was identified in previously cleaned spaces.

I am assuming you may hear of this so wanted to make sure you were aware. I'll keep you advised.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: [REDACTED]
E-mail: bob.ayres@dfo-mpo.gc.ca

From: Chaikin, Gabriel
Sent: May-29-18 12:47 PM
To: Ayres, Bob
Subject: FW: Bartlett Results

Bob,

Here are the sample results for the Bartlett. There is quite a bit to unpack here. The summary below is a good start. Note the usual blanket statements and the beginning and the end.

Overall this is not good news. Our hope is that the majority of the findings are very old and have not posed a risk to the crew. The previous air sample results would support that hope as they were all negative for ACM. Of course some of the areas where these sample wipes were taken, were cleaned during the last refit. This shows that indeed there is a lack of encapsulation.

Our next plan will be air sampling throughout the vessel, followed by cleaning, encapsulation and remediation.

Regards,

Gabriel Chaikin
Marine Engineering | Ingénierie navale
(250) 363-0228

From: [REDACTED]
Sent: 2018-May-29 9:46 AM
To: Chaikin, Gabriel
Cc: [REDACTED]
Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge – fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) – logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
2. Moderate range (> 10,000 – 50,000 s/cm2):
 - a. Bridge – mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck – stb aft alleyway deckhead cavity
 - e. N bridge deck – bridge deckhead cavity
3. Elevated range (> 50,000 – 100,000 s/cm2):
 - a. Bridge – fwd/port console
 - b. Bridge – Fwd middle console
 - c. MCR – port side top of ducting
 - d. Upper deck – aft oilers cabin deckhead cavity
 - e. Gym – top of electrical cabinet
4. High range (> 100,000 s/cm2):
 - a. Bridge – fire panel console (mid port console)
 - b. AMS wireway above sewage tank
 - c. MER wireway adj. escape hatch
 - d. Upper deck – stbd aft watertight door deckhead cavity

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting lead-containing paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



Project Manager
North West Environmental Group Ltd.
 C. [REDACTED]

From: [REDACTED]

Sent: May 29, 2018 8:43 AM

To: 'Chaikin, Gabriel' <Gabriel.Chaikin@dfo-mpo.gc.ca>; [REDACTED]

Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent – pending any emergencies we should be able to send it out around noon. I'll keep you updated.

Thanks for your patience,



[REDACTED]
Project Manager
North West Environmental Group Ltd.
C. [REDACTED]

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>

Sent: May 29, 2018 8:15 AM

To: [REDACTED]

Subject: Bartlett Results

Good day [REDACTED] and [REDACTED]

We are hoping to have the results of our dust wipes in order to proceed with our projects on board.

Thank you

Gabe.

Sent from my BlackBerry 10 smartphone on the Bell network.



North West
Environmental Group Ltd.

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: May 17, 2018
Client Job or PO#: NEED
Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-1b	Port Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	
35254-2b	Starboard Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-4b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Red Gasket	Red	100	None Detected	0	Non-Fibrous	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	



A HA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-7b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Teal Gasket	Teal	100	None Detected	0	Non-Fibrous (70%) Cellulose (15%) Synthetic (15%)	100	
35254-8b Layer 1	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-8b Layer 2	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-9b	Main Engine Room (Fire Station 16)	May-17-2018	JD	Black Gasket	Black	100	None Detected	0	Cellulose (15%) Non-Fibrous (85%)	100	



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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Client: NOR765

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6514792
Client No.: 35254-10b

Description: Red Paint On Metal
Location: Auxiliary Machine Space Watertight Door

Result (% by Weight): <0.0062
Result (ppm): <62
Comments:

Lab No.: 6514793
Client No.: 35254-11b

Description: White Paint On Metal
Location: Main Engine Rm Aft Bulkhead

Result (% by Weight): 0.96
Result (ppm): 9600
Comments:

Lab No.: 6514794
Client No.: 35254-12b

Description: Black Paint On Metal
Location: Port Windlass

Result (% by Weight): <0.0067
Result (ppm): <67
Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/21/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld, III".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:37

Page 1 of 2

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: [REDACTED]
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Paint
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL=0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- * Insufficient sample provided to perform QC reanalysis (<200 mg)
- ** Not enough sample provided to analyze (<50 mg)
- *** Matrix / substrate interference possible.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514632
Client No.:35254-13b

Volume Filtered (mL):5
Dilution Factor (mL):50
Grid Openings:2
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0260
Sensitivity (s/mm²):38.5
Detection Limit (s/cm²):3700

Micrograph Number:
EDXA Spectrum ID:1:14:07PM

Area Sampled (cm²):100
Location:Bridge-Fire Panel Console (Mid Port Console)
Asbestos Structures: 48

Structures < 5 Microns: 44
Structures ≥ 5 µm: 4
Structure Density (s/mm²): 1850
Structure Concentration (s/cm²): 178000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<38.5
Structure Concentration (s/cm²):<3700
Non-Asbestos Type(s):
None Detected

Lab No.:6514633
Client No.:35254-14b

Volume Filtered (mL):1
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):9250

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):50
Location:A.M.S. (Wireway Above Sewage Tank)
Asbestos Structures: 24

Structures < 5 Microns: 22
Structures ≥ 5 µm: 2
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 222000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<9250
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

Page 1 of 12



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514634

Client No.:35254-15b

Volume Filtered (mL):0.25

Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):18500

Micrograph Number:

EDXA Spectrum ID:2:17:13PM

Area Sampled (cm²):100

Location:M.E.R. (Wireway Adjacent To Escape
Hatch)

Asbestos Structures: 6

Structures < 5 Microns: 3

Structures ≥ 5 μm: 3

Structure Density (s/mm²): 57.7

Structure Concentration (s/cm²): 111000

Asbestos Type(s):

Chrysotile

Tremolite

Amosite

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm):0.45

Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Lab No.:6514635

Client No.:35254-16b

Volume Filtered (mL):1

Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630

Micrograph Number:

EDXA Spectrum ID:

Area Sampled (cm²):100

Location:Bridge-(Forward Port Console)

Asbestos Structures: 14

Structures < 5 Microns: 12

Structures ≥ 5 μm: 2

Structure Density (s/mm²): 135

Structure Concentration (s/cm²): 64800

Asbestos Type(s):

Amosite

Chrysotile

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm):0.45

Non-Asbestos Structures:22

Structure Density (s/mm²):212

Structure Concentration (s/cm²):102000

Non-Asbestos Type(s):

SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Dated : 5/28/2018 4:18:31

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514636
Client No.: 35254-17b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²): 100
Location: Bridge-(Forward Middle Console)
Asbestos Structures: 24
Structures < 5 Microns: 21
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 24
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 55500
Non-Asbestos Type(s):
SiAl - Other Fiber
SiMg - Talc

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature:
Analyst:



Approved By:

Frank E. Ehrenfeld, III
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514637
Client No.:35254-18b
Volume Filtered (mL):0.5
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):9250

Area Sampled (cm²):100
Location:Bridge-(Forward Starboard Console)
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6514638
Client No.:35254-19b
Volume Filtered (mL):2
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):2310

Area Sampled (cm²):100
Location:Bridge-(Mid Starboard Console)
Asbestos Structures: 12
Structures < 5 Microns: 11
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 27800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<2310
Non-Asbestos Type(s):
None Detected

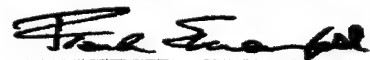
Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature:
Analyst:

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

Page 4 of 12

000985



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514639
Client No.: 35254-20b

Volume Filtered (mL): 3
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 1540

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²): 100
Location: MCR-Console

Asbestos Structures: 11
Structures < 5 Microns: 10
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 106
Structure Concentration (s/cm²): 17000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <1540
Non-Asbestos Type(s):
None Detected

Lab No.: 6514640
Client No.: 35254-21b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²): 100
Location: MCR-Top Of Console

Asbestos Structures: 7
Structures < 5 Microns: 6
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 16200
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

Page 5 of 12

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514641
Client No.:35254-22b

Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):18500

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:MCR-Port Side-Top Of Ducting

Asbestos Structures: 3

Structures < 5 Microns: 3
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 28.8
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Chrysotile
Amosite

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<18500
Non-Asbestos Type(s):
None Detected

Lab No.:6514642
Client No.:35254-23b

Volume Filtered (mL):5
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):925

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:MCR-Port Side-Wireway Adjacent
Switch Console
Asbestos Structures: 7

Structures < 5 Microns: 4
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 6480
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<925
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

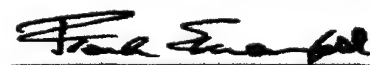
Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

Page 6 of 12

000987



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514643
Client No.: 35254-24b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 100
Location: Upper D: Starboard Aft Alleyway-Deckhead Cavity
Asbestos Structures: 6
Structures < 5 Microns: 5
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 57.7
Structure Concentration (s/cm²): 27800
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514644
Client No.: 35254-25b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Upper D: Stbd Aft Watertight Door-DH Cavity
Asbestos Structures: 22
Structures < 5 Microns: 16
Structures ≥ 5 µm: 6
Structure Density (s/mm²): 212
Structure Concentration (s/cm²): 204000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature:
Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514645
Client No.:35254-26b

Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):18500

Area Sampled (cm²):100
Location:Upper D: Aft Oilers Cabin-Deckhead
Cavity
Asbestos Structures: 2

Structures < 5 Microns: 2
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 37000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<18500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6514646
Client No.:35254-27b

Volume Filtered (mL):1
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):4630

Area Sampled (cm²):100
Location:Poop D: (P-2) Logistics Office-
Deckhead Cavity
Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Asbestos Type(s):
None Detected

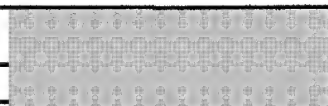
Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

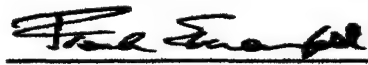
Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature: 
Analyst:

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514647

Client No.:35254-28b

Volume Filtered (mL):0.5

Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Micrograph Number:

EDXA Spectrum ID:

Lab No.:6514648

Client No.:35254-29b

Volume Filtered (mL):2

Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):2310

Micrograph Number:

EDXA Spectrum ID:

Area Sampled (cm²):100

Location:N. Bridge D: (N-5) Cadet Cabin-
Deckhead Cavity

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected

Structures ≥ 5 μm: None Detected

Structure Density (s/mm²): <9.62

Structure Concentration (s/cm²): <9250

Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm):0.45

Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Area Sampled (cm²):100

Location:N. Bridge D: Bridge-Deckhead Cavity

Asbestos Structures: 7

Structures < 5 Microns: 6

Structures ≥ 5 μm: 1

Structure Density (s/mm²): 67.3

Structure Concentration (s/cm²): 16200

Asbestos Type(s):

Chrysotile

Actinolite

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm):0.45

Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Dated : 5/28/2018 4:18:31

Page 9 of 12

000990

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514649
Client No.:35254-30b

Volume Filtered (mL):2
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):4630

Area Sampled (cm²):50
Location:M.E.R.-Aft Port (Metal Plate Beneath Wireway)
Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6514650
Client No.:35254-31b

Volume Filtered (mL):0.5
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):9250

Area Sampled (cm²):100
Location:Gym-Top Of Electrical Cabinet

Asbestos Structures: 9

Structures < 5 Microns: 9
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 86.5
Structure Concentration (s/cm²): 83300
Asbestos Type(s):
Chrysotile
Amosite


Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

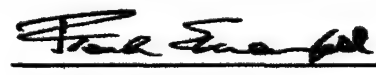
Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature: 
Analyst:

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514651
Client No.:35254-31

Area Sampled (cm²):100
Location:Additional Sample Received

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Volume Filtered (mL):5
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):925

Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 9.62
Structure Concentration (s/cm²): 925
Asbestos Type(s):
Actinolite

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

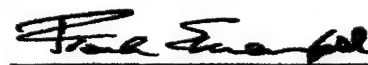
Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Client: NOR765

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6514792
Client No.: 35254-10b

Description: Red Paint On Metal
Location: Auxiliary Machine Space Watertight Door

Result (% by Weight): <0.0062
Result (ppm): <62
Comments:

Lab No.: 6514793
Client No.: 35254-11b

Description: White Paint On Metal
Location: Main Engine Rm Aft Bulkhead

Result (% by Weight): 0.96
Result (ppm): 9600
Comments:

Lab No.: 6514794
Client No.: 35254-12b

Description: Black Paint On Metal
Location: Port Windlass

Result (% by Weight): <0.0067
Result (ppm): <67
Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

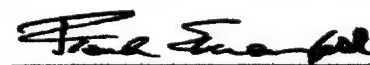
Date Received: 5/18/2018

Date Analyzed: 05/21/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:37

Page 1 of 2

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.: 564104 - Lead Paint

Project: CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Paint

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188

- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

* Insufficient sample provided to perform QC reanalysis (<200 mg)

** Not enough sample provided to analyze (<50 mg)

*** Matrix / substrate interference possible.



North West
Environmental Group Ltd.

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: May 17, 2018

Client Job or PO#: NEED

Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-1b	Port Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	
35254-2b	Starboard Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%)	100	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Cellulose (10%)	100	
35254-4b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Red Gasket	Red	100	None Detected	0	Glass	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Non-Fibrous	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-6b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	White Gasket	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	



PAT PROGRAMS™
AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-7b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Teal Gasket	Teal	100	None Detected	0	Non-Fibrous (70%) Cellulose (15%) Synthetic (15%)	100	
35254-8b Layer 1	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-8b Layer 2	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-9b	Main Engine Room (Fire Station 16)	May-17-2018	JD	Black Gasket	Black	100	None Detected	0	Cellulose (15%) Non-Fibrous (85%)	100	



PAT PROGRAMS™

AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529001
Client No.:35254-47b

Location: Gym-Top Of Electrical Cabinet
Area (cm²): 100
Density (s/mm²): 38.5

Concentration (s/cm²): 1230
Asbestos Type(s): Chrysotile

Lab No.:6529002
Client No.:35254-48b

Location: Gym-Top Of Light
Area (cm²): 100
Density (s/mm²): 115

Concentration (s/cm²): 2780
Asbestos Type(s): Chrysotile

Lab No.:6529003
Client No.:35254-49b

Location: Winch Room-Top Of Aft Heater
Area (cm²): 100
Density (s/mm²): 106

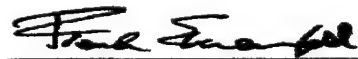
Concentration (s/cm²): 25400
Asbestos Type(s): Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Signature:
Analyst:

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:21:27

Page 1 of 5

CERTIFICATE OF ANALYSIS



Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

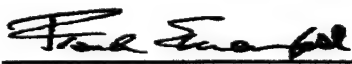
Report Date: 6/8/2018
Report No.: 565543 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529004 Client No.:35254-50b	Location: Winch Room-Top Of Stbd Aft Shelf Area (cm ²): 100 Density (s/mm ²): 106	Concentration (s/cm ²): 12700 Asbestos Type(s): Chrysotile
Lab No.:6529005 Client No.:35254-51b	Location: Boson Stores-Top Of Electrical Box Area (cm ²): 100 Density (s/mm ²): <9.62	Concentration (s/cm ²): <2310 Asbestos Type(s): None Detected
Lab No.:6529006 Client No.:35254-52b	Location: Boson Stores-Top Of Unused Cable Tray Area (cm ²): 100 Density (s/mm ²): 9.62	Concentration (s/cm ²): 2310 Asbestos Type(s): Chrysotile
Lab No.:6529007 Client No.:35254-53b	Location: Cargo Hold-Forward Port Shelf Area (cm ²): 100 Density (s/mm ²): <76.9	Concentration (s/cm ²): <1850 Asbestos Type(s): None Detected
Lab No.:6529008 Client No.:35254-54b	Location: Cargo Hold-Forward Stbd Cable Shield Plate Area (cm ²): 100 Density (s/mm ²): 38.5	Concentration (s/cm ²): 3700 Asbestos Type(s): Chrysotile
Lab No.:6529009 Client No.:35254-55b	Location: Cargo Hold-Aft Port Yellow Lockout Box Area (cm ²): 100 Density (s/mm ²): 38.5	Concentration (s/cm ²): 9250 Asbestos Type(s): Chrysotile
Lab No.:6529010 Client No.:35254-56b	Location: Cargo Hold-Aft Stbd Electrical Box Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <925 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018
Signature: 
Analyst: 

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



TEM WIPE SAMPLE ANALYSIS SUMMARY


Lab No.: 6529011
Client No.: 35254-57b

Location: Field Blank
Area (cm²): Blank
Density (s/mm²): <19.2

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018
Signature: 
Analyst: 

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:21:27

Page 3 of 5

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514632

Client No.:35254-13b

Location: Bridge-Fire Panel Console (Mid Port
Console)

Area (cm²): 100

Density (s/mm²): 1850

Concentration (s/cm²): 178000

Asbestos Type(s): Chrysotile Amosite

Lab No.:6514633

Client No.:35254-14b

Location: A.M.S. (Wireway Above Sewage
Tank)

Area (cm²): 50

Density (s/mm²): 231

Concentration (s/cm²): 222000

Asbestos Type(s): Chrysotile

Lab No.:6514634

Client No.:35254-15b

Location: M.E.R. (Wireway Adjacent To Escape
Hatch)

Area (cm²): 100

Density (s/mm²): 57.7

Concentration (s/cm²): 111000

Asbestos Type(s): Chrysotile Tremolite Amosite

Lab No.:6514635

Client No.:35254-16b

Location: Bridge-(Forward Port Console)

Area (cm²): 100

Density (s/mm²): 135

Concentration (s/cm²): 64800

Asbestos Type(s): Amosite Chrysotile

Lab No.:6514636

Client No.:35254-17b

Location: Bridge-(Forward Middle Console)

Area (cm²): 100

Density (s/mm²): 231

Concentration (s/cm²): 55500

Asbestos Type(s): Amosite Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

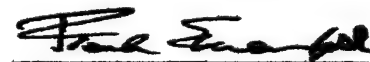
Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III

Laboratory Director

Dated : 5/28/2018 4:18:29

Page 1 of 6

001003

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514637
Client No.:35254-18b

Location: Bridge-(Forward Starboard Console)
Area (cm²): 100
Density (s/mm²): <9.62

Concentration (s/cm²): <9250
Asbestos Type(s): None Detected

Lab No.:6514638
Client No.:35254-19b

Location: Bridge-(Mid Starboard Console)
Area (cm²): 100
Density (s/mm²): 115

Concentration (s/cm²): 27800
Asbestos Type(s): Amosite Chrysotile

Lab No.:6514639
Client No.:35254-20b

Location: MCR-Console
Area (cm²): 100
Density (s/mm²): 106

Concentration (s/cm²): 17000
Asbestos Type(s): Chrysotile Amosite

Lab No.:6514640
Client No.:35254-21b

Location: MCR-Top Of Console
Area (cm²): 100
Density (s/mm²): 67.3

Concentration (s/cm²): 16200
Asbestos Type(s): Chrysotile

Lab No.:6514641
Client No.:35254-22b

Location: MCR-Port Side-Top Of Ducting
Area (cm²): 100
Density (s/mm²): 28.8

Concentration (s/cm²): 55500
Asbestos Type(s): Chrysotile Amosite

Lab No.:6514642
Client No.:35254-23b

Location: MCR-Port Side-Wireway Adjacent
Switch Console
Area (cm²): 100
Density (s/mm²): 67.3

Concentration (s/cm²): 6480
Asbestos Type(s): Chrysotile

Lab No.:6514643
Client No.:35254-24b

Location: Upper D: Starboard Aft Alleyway-
Deckhead Cavity
Area (cm²): 100
Density (s/mm²): 57.7

Concentration (s/cm²): 27800
Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

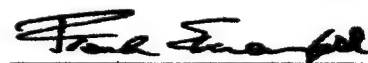
Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514644
Client No.:35254-25b

Location: Upper D: Stbd Aft Watertight Door-
DH Cavity
Area (cm²): 100
Density (s/mm²): 212

Concentration (s/cm²): 204000
Asbestos Type(s): Chrysotile Amosite

Lab No.:6514645
Client No.:35254-26b

Location: Upper D: Aft Oilers Cabin-Deckhead
Cavity
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 37000
Asbestos Type(s): Chrysotile

Lab No.:6514646
Client No.:35254-27b

Location: Poop D: (P-2) Logistics Office-
Deckhead Cavity
Area (cm²): 100
Density (s/mm²): <9.62

Concentration (s/cm²): <4630
Asbestos Type(s): None Detected

Lab No.:6514647
Client No.:35254-28b

Location: N. Bridge D: (N-5) Cadet Cabin-
Deckhead Cavity
Area (cm²): 100
Density (s/mm²): <9.62

Concentration (s/cm²): <9250
Asbestos Type(s): None Detected

Lab No.:6514648
Client No.:35254-29b

Location: N. Bridge D: Bridge-Deckhead Cavity
Area (cm²): 100
Density (s/mm²): 67.3

Concentration (s/cm²): 16200
Asbestos Type(s): Chrysotile Actinolite

Lab No.:6514649
Client No.:35254-30b

Location: M.E.R.-Aft Port (Metal Plate Beneath
Wireway)
Area (cm²): 50
Density (s/mm²): <9.62

Concentration (s/cm²): <4630
Asbestos Type(s): None Detected

Lab No.:6514650
Client No.:35254-31b

Location: Gym-Top Of Electrical Cabinet
Area (cm²): 100
Density (s/mm²): 86.5

Concentration (s/cm²): 83300
Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

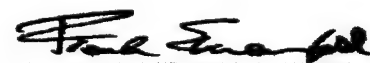
Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

Page 3 of 6

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

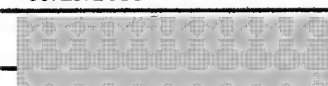
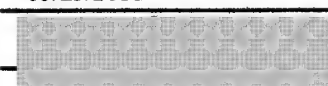
TEM WIPE SAMPLE ANALYSIS SUMMARY

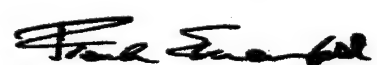
Lab No.:6514651
Client No.:35254-31

Location: Additional Sample Received
Area (cm²): 100
Density (s/mm²): 9.62

Concentration (s/cm²): 925
Asbestos Type(s): Actinolite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018
Signature: 
Analyst: 

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers.

Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

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Analysis by ASTM D6480 - 05(2010)

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Dated : 5/28/2018 4:18:29

Page 5 of 6



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 11, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	W	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	W	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	W	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	W	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



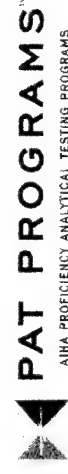
PAT PROGRAMS
AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	VV	<	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	VV	<	Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	VV	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

2/4

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VV	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VV	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VV	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VV	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	AC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

WV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



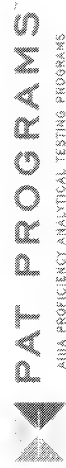
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA), as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red Indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529001
Client No.: 35254-47b
Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Area Sampled (cm²): 100
Location: Gym-Top Of Electrical Cabinet
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 1230
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: 2
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 1230
Non-Asbestos Type(s):
SiMg - Talc
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6529002
Client No.: 35254-48b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 463

Area Sampled (cm²): 100
Location: Gym-Top Of Light
Asbestos Structures: 6
Structures < 5 Microns: 6
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 2780
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: 3
Structure Density (s/mm²): 57.7
Structure Concentration (s/cm²): 1390
Non-Asbestos Type(s):
SiMg - Talc
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

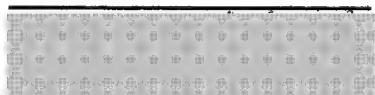
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/11/2018 10:21:27

Page 1 of 7

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529003
Client No.: 35254-49b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Winch Room-Top Of Aft Heater
Asbestos Structures: 11
Structures < 5 Microns: 8
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 106
Structure Concentration (s/cm²): 25400
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 2
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 4630
Non-Asbestos Type(s):
SiAl - Other Fiber

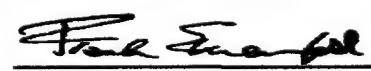
Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Signature:
Analyst:

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:21:28

Page 2 of 7

9000 Commerce Parkway Suite B
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Email: customerservice@iatl.com



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529004
Client No.:35254-50b

Volume Filtered (mL):4
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):1160

Area Sampled (cm²):100
Location: Winch Room-Top Of Stbd Aft Shelf

Asbestos Structures: 11

Structures < 5 Microns: 11
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 106
Structure Concentration (s/cm²): 12700
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<1160
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6529005
Client No.:35254-51b

Volume Filtered (mL):2
Dilution Factor (mL):50
Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):2310

Area Sampled (cm²):100
Location: Boson Stores-Top Of Electrical Box

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<9.62
Structure Concentration (s/cm²):<2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Signature:
Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:21:28

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529006
Client No.: 35254-52b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Boson Stores-Top Of Unused Cable Tray
Asbestos Structures: 1

Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 9.62
Structure Concentration (s/cm²): 2310
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6529007
Client No.: 35254-53b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 1
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0130
Sensitivity (s/mm²): 76.9
Detection Limit (s/cm²): 1850

Area Sampled (cm²): 100
Location: Cargo Hold-Forward Port Shelf

Asbestos Structures: None Detected


Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <76.9
Structure Concentration (s/cm²): <1850
Asbestos Type(s):
None Detected

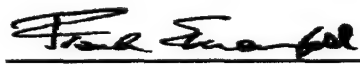
Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <76.9
Structure Concentration (s/cm²): <1850
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018
Signature: 
Analyst:

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529008
Client No.: 35254-54b

Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Cargo Hold-Forward Stbd Cable Shield Plate
Asbestos Structures: 4

Structures < 5 Microns: 4
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6529009
Client No.: 35254-55b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Cargo Hold-Aft Port Yellow Lockout Box
Asbestos Structures: 4

Structures < 5 Microns: 3
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 9250
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

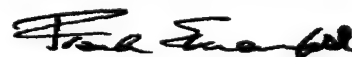
Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Signature:
Analyst:

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:21:28

Page 5 of 7

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

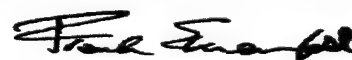
TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529010 Client No.:35254-56b Volume Filtered (mL):10 Dilution Factor (mL):50 Grid Openings:4 Opening Area (mm ²):0.013 Area Analyzed (mm ²):0.0520 Sensitivity (s/mm ²):19.2 Detection Limit (s/cm ²):925 Micrograph Number: EDXA Spectrum ID:	Area Sampled (cm ²):100 Location:Cargo Hold-Aft Stbd Electrical Box <u>Asbestos Structures:</u> None Detected Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm ²): <u>≤19.2</u> Structure Concentration (s/cm ²): <u>≤925</u> Asbestos Type(s): None Detected	Filter Type:MCE Filter Size (mm ²):962 Pore Size (µm):0.45 <u>Non-Asbestos Structures:</u> None Detected Structure Density (s/mm ²):<19.2 Structure Concentration (s/cm ²):<925 Non-Asbestos Type(s): None Detected
Lab No.:6529011 Client No.:35254-57b Volume Filtered (mL):10 Dilution Factor (mL):50 Grid Openings:4 Opening Area (mm ²):0.013 Area Analyzed (mm ²):0.0520 Sensitivity (s/mm ²):19.2 Detection Limit (s/cm ²):NA Micrograph Number: EDXA Spectrum ID:	Area Sampled (cm ²):Blank Location:Field Blank <u>Asbestos Structures:</u> None Detected Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm ²): <u>≤19.2</u> Structure Concentration (s/cm ²): <u>NA</u> Asbestos Type(s): None Detected	Filter Type:MCE Filter Size (mm ²):962 Pore Size (µm):0.45 <u>Non-Asbestos Structures:</u> None Detected Structure Density (s/mm ²):<19.2 Structure Concentration (s/cm ²):NA Non-Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018
Signature: 
Analyst: 

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:21:28

Page 6 of 7



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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



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12 JUNE s.19(1)

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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd. 201 - 415 Gorge Road East Victoria BC V8T 2W1 Client: NOR765	Report Date: 6/13/2018 Report No.: 565817 - TEM Dust Wipe Project: CCGS Bartlett-General Hazmat Consulting Project No.: 35254
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TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6531787 Client No.:35254-72b	Location: Upper D: Crew Cabin U-36 (Aft Port) -TV Shelf Area (cm²): 100 Density (s/mm²): <19.2	Concentration (s/cm²): <925 Asbestos Type(s): None Detected
Lab No.:6531788 Client No.:35254-74b	Location: Upper D: 3rd Engineer Cabin U-27 Behind Monitor Area (cm²): 100 Density (s/mm²): <11.0	Concentration (s/cm²): <881 Asbestos Type(s): None Detected
Lab No.:6531789 Client No.:35254-76b	Location: Field Blank Area (cm²): 100 Density (s/mm²): <12.8	Concentration (s/cm²): <881 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/12/2018
Date Analyzed: 06/13/2018
Signature:
Analyst:

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018
Report No.: 565817 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.



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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/13/2018
Report No.: 565817 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements (<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/13/2018
Report No.: 565817 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531787
Client No.: 35254-72b
Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Upper D: Crew Cabin U-36 (Aft Port)-
TV Shelf
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6531788
Client No.: 35254-74b
Volume Filtered (mL): 6
Dilution Factor (mL): 50
Grid Openings: 7
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0910
Sensitivity (s/mm²): 11.0
Detection Limit (s/cm²): 881

Area Sampled (cm²): 100
Location: Upper D: 3rd Engineer Cabin U-27
Behind Monitor
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <11.0
Structure Concentration (s/cm²): <881
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <11.0
Structure Concentration (s/cm²): <881
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/12/2018
Date Analyzed: 06/13/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:

Dated : 6/13/2018 5:06:42



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/13/2018
Report No.: 565817 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

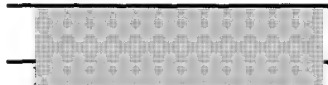
Lab No.: 6531789
Client No.: 35254-76b
Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 6
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0780
Sensitivity (s/mm²): 12.8
Detection Limit (s/cm²): 881

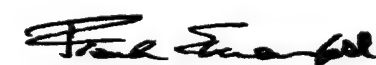
Area Sampled (cm²): 100
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <12.8
Structure Concentration (s/cm²): <881
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <12.8
Structure Concentration (s/cm²): <881
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/12/2018
Date Analyzed: 06/13/2018
Signature: 
Analyst:

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/13/2018 5:06:42

Page 2 of 3

001024

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565817 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536374
Client No.: 35254-83b
Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Fwd Port Window Sill
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6536375
Client No.: 35254-84b
Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Mid Stbd Top Of Console
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 925
Asbestos Type(s):
Chrysotile

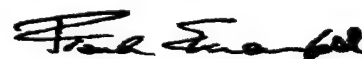
Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/19/2018 11:01:41

Page 1 of 4

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536376
Client No.: 35254-85b
Volume Filtered (mL): 8
Dilution Factor (mL): 50
Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Mid Stbd Inside Console
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6536377
Client No.: 35254-86b
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Fwd Stbd Inside Console
Asbestos Structures: 2
Structures < 5 Microns: 1
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 1850
Asbestos Type(s):
Chrysotile

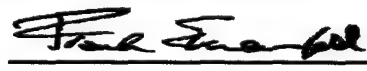
Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 1
Structure Density (s/mm²): 9.62
Structure Concentration (s/cm²): 925
Non-Asbestos Type(s):
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:

Dated : 6/19/2018 11:01:41

Page 2 of 4

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6536378
Client No.:35254-87b

Area Sampled (cm²):Blank
Location:Field Blank

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Volume Filtered (mL):50
Dilution Factor (mL):50
Grid Openings:5
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0650
Sensitivity (s/mm²):15.4
Detection Limit (s/cm²):NA

Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected


Structure Density (s/mm²):<15.4
Structure Concentration (s/cm²):NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/19/2018 11:01:41

Page 3 of 4



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ASBESTOS TESTING LABORATORIES

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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565818 - TEM Dust Wipe
Rev #2, 6/13/2018

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6531790
Client No.:35254-58b

Location: Poop Deck-Supply Officer Cabin-Top
Of Fridge
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.:6531791
Client No.:35254-60b

Location: Poop Deck-3rd Officer Cabin-Book
Shelf
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <771
Asbestos Type(s): None Detected

Lab No.:6531792
Client No.:35254-62b

Location: Poop Deck-Steward Cabin-Window
Sill
Area (cm²): 100
Density (s/mm²): <12.8

Concentration (s/cm²): <881
Asbestos Type(s): None Detected

Lab No.:6531793
Client No.:35254-64b

Location: Field Blank
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <617
Asbestos Type(s): None Detected

Lab No.:6531794
Client No.:35254-66b

Location: Upper Deck-Aft Oiler Cabin-Desk
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 617
Asbestos Type(s): Chrysotile

Lab No.:6531795
Client No.:35254-68b

Location: Boat Deck-Chief Engineer Cabin-
Cabinet Under Porthole
Area (cm²): 100
Density (s/mm²): 57.7

Concentration (s/cm²): 1850
Asbestos Type(s): Chrysotile

Lab No.:6531796
Client No.:35254-70b

Location: Field Blank
Area (cm²): Blank
Density (s/mm²): <7.69

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

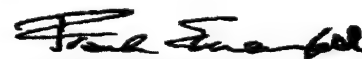
Date Received: 6/12/2018

Date Analyzed: 06/13/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/13/2018 4:59:58

Page 1 of 3

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018
Report No.: 565818 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers.

Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/13/2018 4:59:58

Page 2 of 3



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565818 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements (<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018
Report No.: 565818 - TEM Dust Rev #2, 6/13/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6531790
Client No.:35254-58b

Volume Filtered (mL):10
Dilution Factor (mL):50
Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2
Detection Limit (s/cm²):925

Area Sampled (cm²):100
Location:Poop Deck-Supply Officer Cabin-Top
Of Fridge
Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<19.2
Structure Concentration (s/cm²):<925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6531791
Client No.:35254-60b

Volume Filtered (mL):12
Dilution Factor (mL):50
Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2
Detection Limit (s/cm²):771

Area Sampled (cm²):100
Location:Poop Deck-3rd Officer Cabin-Book
Shelf
Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <771
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

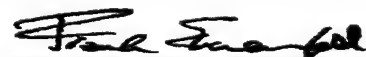
Structure Density (s/mm²):<19.2
Structure Concentration (s/cm²):<771
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/12/2018
Date Analyzed: 06/13/2018

Approved By:



Signature:
Analyst:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/13/2018 4:59:58

Page 1 of 5



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/13/2018
Report No.: 565818 - TEM Dust Rev #2, 6/13/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531792
Client No.: 35254-62b
Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 6
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0780
Sensitivity (s/mm²): 12.8
Detection Limit (s/cm²): 881

Area Sampled (cm²): 100
Location: Poop Deck-Steward Cabin-Window Sill
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <12.8
Structure Concentration (s/cm²): <881
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <12.8
Structure Concentration (s/cm²): <881
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6531793
Client No.: 35254-64b
Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Area Sampled (cm²): 100
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Non-Asbestos Type(s):
None Detected

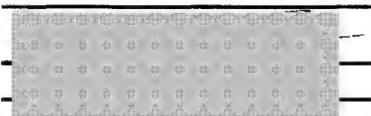
Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/12/2018
Date Analyzed: 06/13/2018

Approved By:

Signature:
Analyst:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/13/2018 4:59:58

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001034

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/13/2018
Report No.: 565818 - TEM Dust Rev #2, 6/13/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531794
Client No.: 35254-66b
Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Area Sampled (cm²): 100
Location: Upper Deck-Aft Oiler Cabin-Desk
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 617
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6531795
Client No.: 35254-68b
Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Area Sampled (cm²): 100
Location: Boat Deck-Chief Engineer Cabin-Cabinet Under Porthole
Asbestos Structures: 3
Structures < 5 Microns: 3
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 57.7
Structure Concentration (s/cm²): 1850
Asbestos Type(s):
Chrysotile

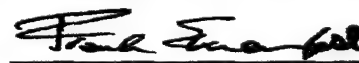
Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

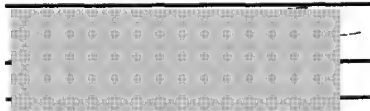
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/12/2018
Date Analyzed: 06/13/2018

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated: 6/13/2018 4:59:58

Page 3 of 5

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/13/2018
Report No.: 565818 - TEM Dust Rev #2, 6/13/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531796
Client No.: 35254-70b
Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Area Sampled (cm²): Blank
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

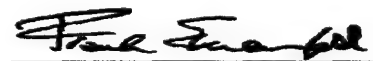
Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/12/2018
Date Analyzed: 06/13/2018

Approved By:



Signature:
Analyst:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/13/2018 4:59:59

Page 4 of 5

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018
Report No.: 565818 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



IATL

INTERNATIONAL
ASBESTOS TESTING LABORATORIES

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Post Bridge Clearing

06/18/2018

s.19(1)

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6536374
Client No.: 35254-83b

Location: Wheelhouse-Fwd Port Window Sill
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.: 6536375
Client No.: 35254-84b

Location: Wheelhouse-Mid Stbd Top Of Console
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 925
Asbestos Type(s): Chrysotile

Lab No.: 6536376
Client No.: 35254-85b

Location: Wheelhouse-Mid Stbd Inside Console
Area (cm²): 100
Density (s/mm²): <15.4

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.: 6536377
Client No.: 35254-86b

Location: Wheelhouse-Fwd Stbd Inside Console
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 1850
Asbestos Type(s): Chrysotile

Lab No.: 6536378
Client No.: 35254-87b

Location: Field Blank
Area (cm²): Blank
Density (s/mm²): <15.4

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018

Date Analyzed: 06/19/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/19/2018 11:01:40

Page 1 of 3

001038

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers.

Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/19/2018 11:01:40

Page 2 of 3



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

ALL JUNE
AIR SAMPLES



**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



ANA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	W	<	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	W	<	
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	W	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



s.19(1)

Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	W	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	W	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	W	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	W	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	W	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	W	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Top / 4th Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	W	<	Level / PAPR

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

3/5

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	VV	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	VV	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	VV	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	VV	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	VV	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSEB Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

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*** Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml
 AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6536374
Client No.:35254-83b

Location: Wheelhouse-Fwd Port Window Sill
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.:6536375
Client No.:35254-84b

Location: Wheelhouse-Mid Stbd Top Of
Console
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 925
Asbestos Type(s): Chrysotile

Lab No.:6536376
Client No.:35254-85b

Location: Wheelhouse-Mid Stbd Inside Console
Area (cm²): 100
Density (s/mm²): <15.4

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.:6536377
Client No.:35254-86b

Location: Wheelhouse-Fwd Stbd Inside Console
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 1850
Asbestos Type(s): Chrysotile

Lab No.:6536378
Client No.:35254-87b

Location: Field Blank
Area (cm²): Blank
Density (s/mm²): <15.4

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

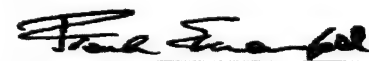
Date Received: 6/18/2018

Date Analyzed: 06/19/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/19/2018 11:01:40

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536374
Client No.: 35254-83b
Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Fwd Port Window Sill
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6536375
Client No.: 35254-84b

Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Mid Stbd Top Of Console
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 925
Asbestos Type(s):
Chrysotile

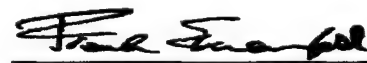
Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/19/2018 11:01:41

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6536376

Client No.:35254-85b

Volume Filtered (mL):8

Dilution Factor (mL):50

Grid Openings:5

Opening Area (mm²):0.013

Area Analyzed (mm²):0.0650

Sensitivity (s/mm²):15.4

Detection Limit (s/cm²):925

Micrograph Number:

EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Wheelhouse-Mid Stbd Inside Console

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected

Structures ≥ 5 µm: None Detected

Structure Density (s/mm²): <15.4

Structure Concentration (s/cm²): <925

Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962

Pore Size (µm):0.45

Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<15.4

Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Lab No.:6536377

Client No.:35254-86b

Volume Filtered (mL):5

Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):925

Micrograph Number:

EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Wheelhouse-Fwd Stbd Inside Console

Asbestos Structures: 2

Structures < 5 Microns: 1

Structures ≥ 5 µm: 1

Structure Density (s/mm²): 19.2

Structure Concentration (s/cm²): 1850

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962

Pore Size (µm):0.45

Non-Asbestos Structures: 1

Structure Density (s/mm²):9.62

Structure Concentration (s/cm²):925

Non-Asbestos Type(s):

SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

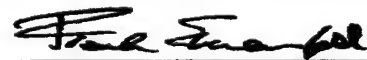
Date Received: 6/18/2018

Date Analyzed: 06/19/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/19/2018 11:01:41

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536378
Client No.: 35254-87b

Area Sampled (cm²): Blank
Location: Field Blank

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cm²): NA

Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

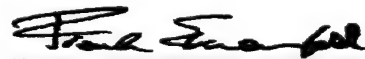
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:

Dated : 6/19/2018 11:01:41

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Air Sample Report

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS™
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LAB# 202314

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	W	<	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	W	<	Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	W	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

2/5

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospitala	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VV	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VV	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VV	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VV	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	VV	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	VV	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Top Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	VV	<	4th Level / PAPR

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Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	W	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	W	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	W	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	W	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	W	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

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*** Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/ml. (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

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**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

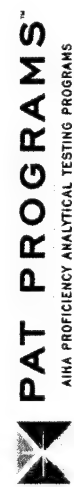
Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 19, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mine)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	W	<	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	W	<	Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	W	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

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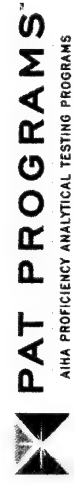
LAB# 202314

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001059

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VW	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VW	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VW	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VW	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	VW	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	VW	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Top / 4th Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	VW	<	Top / 4th Level / PAPR

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LAB# 202314

Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	W	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	W	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	W	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per W5BC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.


QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.


VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

 Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

 Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Air Sample Report

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

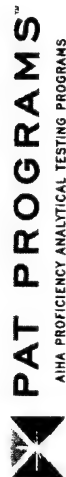
Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 22, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mine)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	V	<	Tyvek, PAPR, Gloves, Boots, Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	V	<	Tyvek, PAPR, Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	V	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospital	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VV	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VV	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VV	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VV	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	VV	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	VV	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Top / 4th Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	VV	<	Level / PAPR

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	W	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	W	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	W	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	W	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	W	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-63a	Jun-22-2018	Jun-22-2018	(OCC) MER	OCC	BR	2.26	07:36	08:57	81	7.5	100	183.06	9.55	0.02	V	<	
35254-64a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Port Alleyway	AMB	BR	2.26	08:05	13:48	343	3.5	100	775.18	4.46	<0.01	W	<	
35254-65a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Starboard Alleyway	AMB	BR	2.25	08:01	N/A	N/A	6.0	100	N/A	N/A	N/A			Pump failure
35254-66a	Jun-22-2018	Jun-22-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			

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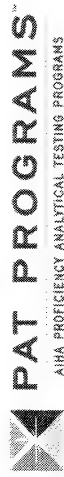
LAB# 202314

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***Legend and Explanation of Terms**

- CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml
- AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml
- OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)
- AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.
- QC - quality control: Blank field testing for quality assurance.
- OL - overloaded: This is when the air sample is so overloaded that it is unreadable.
- VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)
- V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)
- Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)
-  Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)
- Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.
-  Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

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LAB# 202314

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CCGS-NGCC, Bartlett Chief Engineer

From: CCGS-NGCC, Bartlett Captain
Sent: May-29-18 10:57 AM
To: McNish Joanne
Cc: ' (ROCSupt@dfm-mpo.gc.ca)'; CCGS-NGCC, Bartlett Chief Engineer
Subject: FW: Bartlett Results
Attachments: image001.png; 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1 V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

Joanne;

Attached is an asbestos results report from wipe samples taken by North West Environmental at the onset of this refit.

Of concern are the elevated and high results in some areas.





We do not have the knowledge or skills to address these levels, so have asked Marine Engineering to invite North West to come down to the ship and advise on mitigation measures.

Is there an Asbestos Advisory Group in Ottawa whose experts can advise on a strategy moving forward?

Chief Engineer Jackson and myself can come up to discuss if you have some time.

Mike

Captain Mike McCullagh
Commanding Officer, CCGS Bartlett
Email: BartlettCO@bar.ccgsg-ngcc.gc.ca

Cell: 
Tellular: 
Victoria CG Base Landline: 250.480.2692
Iridium Voice: 
Iridium Data: 

Mailing Address:
25 Huron Street
Victoria BC V8V 4V9



Canada

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May-29-18 10:24 AM
To: CCGS-NGCC, Bartlett Captain
Subject: FW: Bartlett Results

Asbestos and lead paint test results from pre-refit sampling arranged by WC.

Matt Jackson
Chief Engineer

CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]
Sent: May-29-18 10:17 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Fw: Bartlett Results

Matt,

I'll look over these and we can talk in the afternoon. We can meet with NWE onboard tomorrow if you think we should.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: [REDACTED]
Sent: Tuesday, May 29, 2018 10:01
To: Chaikin, Gabriel
Cc: [REDACTED]
Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge – fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) – logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
2. Moderate range (> 10,000 – 50,000 s/cm2):
 - a. Bridge – mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck – stb aft alleyway deckhead cavity
 - e. N bridge deck – bridge deckhead cavity
3. Elevated range (> 50,000 – 100,000 s/cm2):
 - a. Bridge – fwd/port console
 - b. Bridge – Fwd middle console
 - c. MCR – port side top of ducting
 - d. Upper deck – aft oilers cabin deckhead cavity
 - e. Gym – top of electrical cabinet

4. High range (> 100,000 s/cm2):

- a. Bridge – fire panel console (mid port console)
- b. AMS wireway above sewage tank
- c. MER wireway adj. escape hatch
- d. Upper deck – stbd aft watertight door deckhead cavity

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting lead-containing paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



[Redacted]
Project Manager
North West Environmental Group Ltd.

C. [Redacted]

From: [Redacted]

Sent: May 29, 2018 8:43 AM

To: 'Chaikin, Gabriel' <Gabriel.Chaikin@dfo-mpo.gc.ca>; [Redacted]

Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent – pending any emergencies we should be able to send it out around noon. I'll keep you updated.

Thanks for your patience,



[Redacted]
Project Manager
North West Environmental Group Ltd.

C. [Redacted]

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>

Sent: May 29, 2018 8:15 AM

To: [Redacted]

Subject: Bartlett Results

Good day [Redacted] and [Redacted]

We are hoping to have the results of our dust wipes in order to proceed with our projects on board.

Thank you

Gabe.

Sent from my BlackBerry 10 smartphone on the Bell network.

No information has been removed or severed from this page



North West Environmental Group Ltd.



**North West
Environmental Group Ltd.**

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

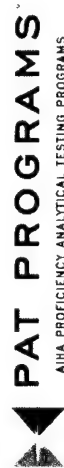
Project: CCGS Bartlett - General Hazmat Consulting

Date: May 17, 2018

Client Job or PO#: NEED

Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-1b	Port Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	
35254-2b	Starboard Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-4b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Red Gasket	Red	100	None Detected	0	Non-Fibrous	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	



AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-7b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Teal Gasket	Teal	100	None Detected	0	Non-Fibrous (70%) Cellulose (15%) Synthetic (15%)	100	
35254-8b Layer 1	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-8b Layer 2	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-9b	Main Engine Room (Fire Station 16)	May-17-2018	JD	Black Gasket	Black	100	None Detected	0	Cellulose (15%) Non-Fibrous (85%)	100	



LAB# 202314



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514632
Client No.:35254-13b

Location: Bridge-Fire Panel Console (Mid Port Console)
Area (cm²): 100
Density (s/mm²): 1850

Concentration (s/cm³): 178000
Asbestos Type(s): Chrysotile Amosite

Lab No.:6514633
Client No.:35254-14b

Location: A.M.S. (Wireway Above Sewage Tank)
Area (cm²): 50
Density (s/mm²): 231

Concentration (s/cm³): 222000
Asbestos Type(s): Chrysotile

Lab No.:6514634
Client No.:35254-15b

Location: M.E.R. (Wireway Adjacent To Escape Hatch)
Area (cm²): 100
Density (s/mm²): 57.7

Concentration (s/cm³): 111000
Asbestos Type(s): Chrysotile Tremolite Amosite

Lab No.:6514635
Client No.:35254-16b

Location: Bridge-(Forward Port Console)
Area (cm²): 100
Density (s/mm²): 135

Concentration (s/cm³): 64800
Asbestos Type(s): Amosite Chrysotile

Lab No.:6514636
Client No.:35254-17b

Location: Bridge-(Forward Middle Console)
Area (cm²): 100
Density (s/mm²): 231

Concentration (s/cm³): 55500
Asbestos Type(s): Amosite Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature: _____
Analyst: _____

Approved By: _____

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

Page 1 of 6

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9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514637 Client No.:35254-18b	Location: Bridge-(Forward Starboard Console) Area (cm ²): 100 Density (s/mm ²): <9.62	Concentration (s/cm ²): <9250 Asbestos Type(s): None Detected
Lab No.:6514638 Client No.:35254-19b	Location: Bridge-(Mid Starboard Console) Area (cm ²): 100 Density (s/mm ²): 115	Concentration (s/cm ²): 27800 Asbestos Type(s): Amosite Chrysotile
Lab No.:6514639 Client No.:35254-20b	Location: MCR-Console Area (cm ²): 100 Density (s/mm ²): 106	Concentration (s/cm ²): 17000 Asbestos Type(s): Chrysotile Amosite
Lab No.:6514640 Client No.:35254-21b	Location: MCR-Top Of Console Area (cm ²): 100 Density (s/mm ²): 67.3	Concentration (s/cm ²): 16200 Asbestos Type(s): Chrysotile
Lab No.:6514641 Client No.:35254-22b	Location: MCR-Port Side-Top Of Ducting Area (cm ²): 100 Density (s/mm ²): 28.8	Concentration (s/cm ²): 55500 Asbestos Type(s): Chrysotile Amosite
Lab No.:6514642 Client No.:35254-23b	Location: MCR-Port Side-Wireway Adjacent Switch Console Area (cm ²): 100 Density (s/mm ²): 67.3	Concentration (s/cm ²): 6480 Asbestos Type(s): Chrysotile
Lab No.:6514643 Client No.:35254-24b	Location: Upper D: Starboard Aft Alleyway- Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): 57.7	Concentration (s/cm ²): 27800 Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature: _____

Analyst: _____

Approved By: _____

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514644
Client No.:35254-25b

Location: Upper D: Stbd Aft Watertight Door-
DH Cavity
Area (cm²): 100
Density (s/mm²): 212

Concentration (s/cm²): 204000
Asbestos Type(s): Chrysotile Amosite

Lab No.:6514645
Client No.:35254-26b

Location: Upper D: Aft Oilers Cabin-Deckhead
Cavity
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 37000
Asbestos Type(s): Chrysotile

Lab No.:6514646
Client No.:35254-27b

Location: Poop D: (P-2) Logistics Office-
Deckhead Cavity
Area (cm²): 100
Density (s/mm²): <9.62

Concentration (s/cm²): <4630
Asbestos Type(s): None Detected

Lab No.:6514647
Client No.:35254-28b

Location: N. Bridge D: (N-5) Cadet Cabin-
Deckhead Cavity
Area (cm²): 100
Density (s/mm²): <9.62

Concentration (s/cm²): <9250
Asbestos Type(s): None Detected

Lab No.:6514648
Client No.:35254-29b

Location: N. Bridge D: Bridge-Deckhead Cavity
Area (cm²): 100
Density (s/mm²): 67.3

Concentration (s/cm²): 16200
Asbestos Type(s): Chrysotile Actinolite

Lab No.:6514649
Client No.:35254-30b

Location: M.E.R.-Aft Port (Metal Plate Beneath
Wireway)
Area (cm²): 50
Density (s/mm²): <9.62

Concentration (s/cm²): <4630
Asbestos Type(s): None Detected

Lab No.:6514650
Client No.:35254-31b

Location: Gym-Top Of Electrical Cabinet
Area (cm²): 100
Density (s/mm²): 86.5

Concentration (s/cm²): 83300
Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

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s.19(1)



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY


Lab No.: 6514651
Client No.: 35254-31

Location: Additional Sample Received
Area (cm²): 100
Density (s/mm²): 9.62

Concentration (s/cm²): 925
Asbestos Type(s): Actinolite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018
Signature: _____
Analyst: _____

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: [REDACTED]
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Air Cassettes
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- (1)Note: Sample not analyzed.
- (2)Note: Sample not analyzed at request of client.
- (3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.
- (4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.
- (5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 5/28/2018 4:18:29

Page 5 of 6

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514632
Client No.: 35254-13b
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 2
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0260
Sensitivity (s/mm²): 38.5
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Bridge-Fire Panel Console (Mid Port Console)
Asbestos Structures: 48
Structures < 5 Microns: 44
Structures ≥ 5 μm: 4
Structure Density (s/mm²): 1850
Structure Concentration (s/cm²): 178000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <38.5
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID: 1:14:07PM

Lab No.: 6514633
Client No.: 35254-14b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 50
Location: A.M.S. (Wireway Above Sewage Tank)
Asbestos Structures: 24
Structures < 5 Microns: 22
Structures ≥ 5 μm: 2
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 222000
Asbestos Type(s):
Chrysotile

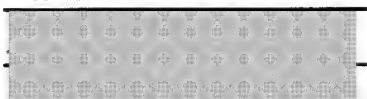
Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature:
Analyst:



Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld, III".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31



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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514634 Client No.:35254-15b Volume Filtered (mL):0.25 Dilution Factor (mL):50 Grid Openings:8 Opening Area (mm ²):0.013 Area Analyzed (mm ²):0.104 Sensitivity (s/mm ²):9.62 Detection Limit (s/cm ²):18500 Micrograph Number: EDXA Spectrum ID:2:17:13PM	Area Sampled (cm ²):100 Location:M.E.R. (Wireway Adjacent To Escape Hatch) <u>Asbestos Structures:</u> 6 Structures < 5 Microns: 3 Structures ≥ 5 µm: 3 Structure Density (s/mm ²): <u>57.7</u> Structure Concentration (s/cm ²): <u>111000</u> <u>Asbestos Type(s):</u> Chrysotile Tremolite Amosite	Filter Type:MCE Filter Size (mm ²):962 Pore Size (µm):0.45 <u>Non-Asbestos Structures:</u> None Detected Structure Density (s/mm ²):<9.62 Structure Concentration (s/cm ²):<18500 <u>Non-Asbestos Type(s):</u> None Detected
Lab No.:6514635 Client No.:35254-16b Volume Filtered (mL):1 Dilution Factor (mL):50 Grid Openings:8 Opening Area (mm ²):0.013 Area Analyzed (mm ²):0.104 Sensitivity (s/mm ²):9.62 Detection Limit (s/cm ²):4630 Micrograph Number: EDXA Spectrum ID:	Area Sampled (cm ²):100 Location:Bridge-(Forward Port Console) <u>Asbestos Structures:</u> 14 Structures < 5 Microns: 12 Structures ≥ 5 µm: 2 Structure Density (s/mm ²): <u>135</u> Structure Concentration (s/cm ²): <u>64800</u> <u>Asbestos Type(s):</u> Amosite Chrysotile	Filter Type:MCE Filter Size (mm ²):962 Pore Size (µm):0.45 <u>Non-Asbestos Structures:</u> 22 Structure Density (s/mm ²):212 Structure Concentration (s/cm ²):102000 <u>Non-Asbestos Type(s):</u> SiAl - Other Fiber

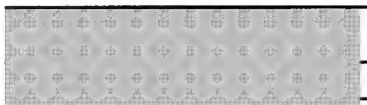
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31

Page 2 of 12

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514636
Client No.: 35254-17b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Bridge-(Forward Middle Console)

Asbestos Structures: 24
Structures < 5 Microns: 21
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 24
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 55500
Non-Asbestos Type(s):
SiAl - Other Fiber
SiMg - Talc

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

Page 3 of 12

001083



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514637
Client No.: 35254-18b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Bridge-(Forward Starboard Console)
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514638
Client No.: 35254-19b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Bridge-(Mid Starboard Console)
Asbestos Structures: 12
Structures < 5 Microns: 11
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 27800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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s.19(1)



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514639
Client No.: 35254-20b
Volume Filtered (mL): 3
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 1540

Area Sampled (cm²): 100
Location: MCR-Console
Asbestos Structures: 11
Structures < 5 Microns: 10
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 106
Structure Concentration (s/cm²): 17000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <1540
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514640
Client No.: 35254-21b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: MCR-Top Of Console
Asbestos Structures: 7
Structures < 5 Microns: 6
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 16200
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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001085



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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514641
Client No.: 35254-22b
Volume Filtered (mL): 0.25
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 18500

Area Sampled (cm²): 100
Location: MCR-Port Side-Top Of Ducting
Asbestos Structures: 3
Structures < 5 Microns: 3
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 28.8
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <18500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514642
Client No.: 35254-23b
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: MCR-Port Side-Wireway Adjacent
Switch Console
Asbestos Structures: 7
Structures < 5 Microns: 4
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 6480
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

Page 6 of 12



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514643
Client No.: 35254-24b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 100
Location: Upper D: Starboard Aft Alleyway-
Deckhead Cavity
Asbestos Structures: 6
Structures < 5 Microns: 5
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 57.7
Structure Concentration (s/cm²): 27800
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514644
Client No.: 35254-25b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Upper D: Stbd Aft Watertight Door-
DH Cavity
Asbestos Structures: 22
Structures < 5 Microns: 16
Structures ≥ 5 µm: 6
Structure Density (s/mm²): 212
Structure Concentration (s/cm²): 204000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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9000 Commerce Parkway Suite B
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514645
Client No.: 35254-26b
Volume Filtered (mL): 0.25
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 18500

Area Sampled (cm²): 100
Location: Upper D: Aft Oilers Cabin-Deckhead Cavity
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 37000
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <18500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514646
Client No.: 35254-27b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 100
Location: Poop D: (P-2) Logistics Office-Deckhead Cavity
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018
Signature: _____
Analyst: _____

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514647
Client No.: 35254-28b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: N. Bridge D: (N-5) Cadet Cabin-
Deckhead Cavity
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514648
Client No.: 35254-29b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: N. Bridge D: Bridge-Deckhead Cavity
Asbestos Structures: 7
Structures < 5 Microns: 6
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 16200
Asbestos Type(s):
Chrysotile
Actinolite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

Page 9 of 12



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514649
Client No.: 35254-30b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 50
Location: M.E.R.-Aft Port (Metal Plate Beneath Wireway)
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514650
Client No.: 35254-31b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Gym-Top Of Electrical Cabinet
Asbestos Structures: 9
Structures < 5 Microns: 9
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 86.5
Structure Concentration (s/cm²): 83300
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31

Page 10 of 12



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS



Lab No.: 6514651
Client No.: 35254-31
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

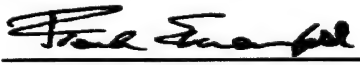
Area Sampled (cm²): 100
Location: Additional Sample Received
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 9.62
Structure Concentration (s/cm²): 925
Asbestos Type(s):
Actinolite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018
Signature: 
Analyst: 

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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001091



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Client: NOR765

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6514792
Client No.: 35254-10b

Description: Red Paint On Metal
Location: Auxiliary Machine Space Watertight Door

Result (% by Weight): <0.0062
Result (ppm): <62
Comments:

Lab No.: 6514793
Client No.: 35254-11b

Description: White Paint On Metal
Location: Main Engine Rm Aft Bulkhead

Result (% by Weight): 0.96
Result (ppm): 9600
Comments:

Lab No.: 6514794
Client No.: 35254-12b

Description: Black Paint On Metal
Location: Port Windlass

Result (% by Weight): <0.0067
Result (ppm): <67
Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/21/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:37

Page 1 of 2

001093



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: [REDACTED]
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Paint
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- * Insufficient sample provided to perform QC reanalysis (<200 mg)
- ** Not enough sample provided to analyze (<50 mg)
- *** Matrix / substrate interference possible.

CCGS-NGCC, Bartlett Chief Engineer

From: CCGS-NGCC, Bartlett Captain
Sent: May-29-18 10:57 AM
To: McNish Joanne
Cc: ' (ROCSupt@dfo-mpo.gc.ca)'; CCGS-NGCC, Bartlett Chief Engineer
Subject: FW: Bartlett Results
Attachments: image001.png; 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1 V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

Joanne;

Attached is an asbestos results report from wipe samples taken by North West Environmental at the onset of this refit.

Of concern are the elevated and high results in some areas.

We do not have the knowledge or skills to address these levels, so have asked Marine Engineering to invite North West to come down to the ship and advise on mitigation measures.

Is there an Asbestos Advisory Group in Ottawa whose experts can advise on a strategy moving forward?

Chief Engineer Jackson and myself can come up to discuss if you have some time.

Mike

Captain Mike McCullagh
Commanding Officer, CCGS Bartlett
Email: BartlettCO@bar.ccgsg-ngcc.gc.ca

Cell: [REDACTED]
Tellular: [REDACTED]
Victoria CG Base Landline: 250.480.2692
Irridium Voice: [REDACTED]
Irridium Data: [REDACTED]

Mailing Address:
25 Huron Street
Victoria BC V8V 4V9



Government
of Canada

Gouvernement
du Canada

Canada

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May-29-18 10:24 AM
To: CCGS-NGCC, Bartlett Captain
Subject: FW: Bartlett Results

Asbestos and lead paint test results from pre-refit sampling arranged by WC.

Matt Jackson
Chief Engineer

CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: Chaikin, Gabriel [<mailto:Gabriel.Chaikin@dfo-mpo.gc.ca>]
Sent: May-29-18 10:17 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Fw: Bartlett Results

Matt,

I'll look over these and we can talk in the afternoon. We can meet with NWE onboard tomorrow if you think we should.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: [REDACTED]
Sent: Tuesday, May 29, 2018 10:01
To: Chaikin, Gabriel
Cc: [REDACTED]
Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge – fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) – logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
2. Moderate range (> 10,000 – 50,000 s/cm2):
 - a. Bridge – mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck – stb aft alleyway deckhead cavity
 - e. N bridge deck – bridge deckhead cavity
3. Elevated range (> 50,000 – 100,000 s/cm2):
 - a. Bridge – fwd/port console
 - b. Bridge – Fwd middle console
 - c. MCR – port side top of ducting
 - d. Upper deck – aft oilers cabin deckhead cavity
 - e. Gym – top of electrical cabinet

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565818 - TEM Dust Wipe Rev #2, 6/13/2018

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531792
Client No.: 35254-62b

Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 6
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0780
Sensitivity (s/mm²): 12.8
Detection Limit (s/cm²): 881

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²): 100
Location: Poop Deck-Steward Cabin-Window Sill
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): ≤12.8
Structure Concentration (s/cm²): ≤881
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <12.8
Structure Concentration (s/cm²): <881
Non-Asbestos Type(s):
None Detected

Lab No.: 6531793
Client No.: 35254-64b

Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²): 100
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): ≤19.2
Structure Concentration (s/cm²): ≤617
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

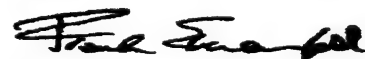
Date Received: 6/12/2018

Date Analyzed: 06/13/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/13/2018 4:59:58

Page 2 of 5

001097

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565818 - TEM Dust Rev #2, 6/13/2018
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531796

Client No.: 35254-70b

Volume Filtered (mL): 7

Dilution Factor (mL): 50

Grid Openings: 10

Opening Area (mm²): 0.013

Area Analyzed (mm²): 0.130

Sensitivity (s/mm²): 7.69

Detection Limit (s/cm²): NA

Micrograph Number:

EDXA Spectrum ID:

Area Sampled (cm²): Blank

Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected

Structures ≥ 5 μm: None Detected

Structure Density (s/mm²): <7.69

Structure Concentration (s/cm²): NA

Asbestos Type(s):

None Detected

Filter Type: MCE

Filter Size (mm²): 962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <7.69

Structure Concentration (s/cm²): NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

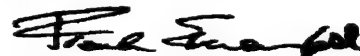
Date Received: 6/12/2018

Date Analyzed: 06/13/2018

Signature: 

Analyst:

Approved By:



Frank E. Ehrenfeld, III

Laboratory Director

Dated : 6/13/2018 4:59:59

Page 4 of 5

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565817 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6531787
Client No.:35254-72b

Location: Upper D: Crew Cabin U-36 (Aft Port)
-TV Shelf
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.:6531788
Client No.:35254-74b

Location: Upper D: 3rd Engineer Cabin U-27
Behind Monitor
Area (cm²): 100
Density (s/mm²): <11.0

Concentration (s/cm²): <881
Asbestos Type(s): None Detected

Lab No.:6531789
Client No.:35254-76b

Location: Field Blank
Area (cm²): 100
Density (s/mm²): <12.8

Concentration (s/cm²): <881
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

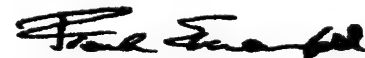
Date Received: 6/12/2018

Date Analyzed: 06/13/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/13/2018 5:06:41

Page 1 of 3

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565817 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

 CERTIFICATE OF ANALYSIS

 Client: North West Environmental Group Ltd.
 201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

 Report No.: 565817 - TEM Dust
 Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

 TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531789

Client No.: 35254-76b

Volume Filtered (mL): 7

Dilution Factor (mL): 50

Grid Openings: 6

 Opening Area (mm²): 0.013

 Area Analyzed (mm²): 0.0780

 Sensitivity (s/mm²): 12.8

 Detection Limit (s/cm²): 881

 Area Sampled (cm²): 100

Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected

Structures ≥ 5 µm: None Detected

 Structure Density (s/mm²): <12.8

 Structure Concentration (s/cm²): <881

Asbestos Type(s):

None Detected

Filter Type: MCE

 Filter Size (mm²): 962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

 Structure Density (s/mm²): <12.8

 Structure Concentration (s/cm²): <881

Non-Asbestos Type(s):

None Detected

Micrograph Number:

EDXA Spectrum ID:

 Please refer to the Preface of this report for further information regarding your analysis.

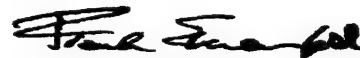
Date Received: 6/12/2018

Date Analyzed: 06/13/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III

Laboratory Director

Dated : 6/13/2018 5:06:42

Page 2 of 3

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529001
Client No.:35254-47b

Volume Filtered (mL):15
Dilution Factor (mL):50
Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2
Detection Limit (s/cm²):617

Area Sampled (cm²):100
Location:Gym-Top Of Electrical Cabinet

Asbestos Structures: 2

Structures < 5 Microns: 2
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 1230
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:2
Structure Density (s/mm²):38.5
Structure Concentration (s/cm²):1230
Non-Asbestos Type(s):
SiMg - Talc
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6529002
Client No.:35254-48b

Volume Filtered (mL):20
Dilution Factor (mL):50
Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2
Detection Limit (s/cm²):463

Area Sampled (cm²):100
Location:Gym-Top Of Light

Asbestos Structures: 6

Structures < 5 Microns: 6
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 2780
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:3
Structure Density (s/mm²):57.7
Structure Concentration (s/cm²):1390
Non-Asbestos Type(s):
SiMg - Talc
SiAl - Other Fiber

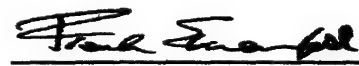
Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Signature:
Analyst:

Approved By:


Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:21:27

Page 1 of 7

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529004

Client No.:35254-50b

Volume Filtered (mL):4

Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013Area Analyzed (mm²):0.104Sensitivity (s/mm²):9.62Detection Limit (s/cm²):1160Area Sampled (cm²):100

Location:Winch Room-Top Of Stbd Aft Shelf

Asbestos Structures: 11

Structures < 5 Microns: 11

Structures ≥ 5 μm: None Detected

Structure Density (s/mm²): 106Structure Concentration (s/cm²): 12700

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm):0.45

Non-Asbestos Structures:None DetectedStructure Density (s/mm²):<9.62Structure Concentration (s/cm²):<1160

Non-Asbestos Type(s):

None Detected

Micrograph Number:

EDXA Spectrum ID:

Lab No.:6529005

Client No.:35254-51b

Volume Filtered (mL):2

Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013Area Analyzed (mm²):0.104Sensitivity (s/mm²):9.62Detection Limit (s/cm²):2310Area Sampled (cm²):100

Location:Boson Stores-Top Of Electrical Box

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected

Structures ≥ 5 μm: None Detected

Structure Density (s/mm²): <9.62Structure Concentration (s/cm²): <2310

Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm):0.45

Non-Asbestos Structures:None DetectedStructure Density (s/mm²):<9.62Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Micrograph Number:

EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

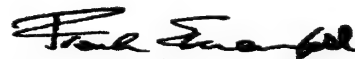
Date Received: 6/8/2018

Date Analyzed: 06/08/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III

Laboratory Director

Dated : 6/11/2018 10:21:28

Page 3 of 7

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529008

Client No.: 35254-54b

Volume Filtered (mL): 5

Dilution Factor (mL): 50

Grid Openings: 8

Opening Area (mm²): 0.013

Area Analyzed (mm²): 0.104

Sensitivity (s/mm²): 9.62

Detection Limit (s/cm²): 925

Area Sampled (cm²): 100

Location: Cargo Hold-Forward Stbd Cable

Shield Plate

Asbestos Structures: 4

Structures < 5 Microns: 4

Structures ≥ 5 µm: None Detected

Structure Density (s/mm²): 38.5

Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²): 962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62

Structure Concentration (s/cm²): <925

Non-Asbestos Type(s):

None Detected

Micrograph Number:

EDXA Spectrum ID:

Lab No.: 6529009

Client No.: 35254-55b

Volume Filtered (mL): 2

Dilution Factor (mL): 50

Grid Openings: 8

Opening Area (mm²): 0.013

Area Analyzed (mm²): 0.104

Sensitivity (s/mm²): 9.62

Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100

Location: Cargo Hold-Aft Port Yellow Lockout

Box

Asbestos Structures: 4

Structures < 5 Microns: 3

Structures ≥ 5 µm: 1

Structure Density (s/mm²): 38.5

Structure Concentration (s/cm²): 9250

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²): 962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62

Structure Concentration (s/cm²): <2310

Non-Asbestos Type(s):

None Detected

Micrograph Number:

EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

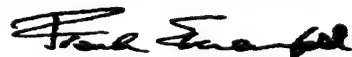
Date Received: 6/8/2018

Date Analyzed: 06/08/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III

Laboratory Director

Dated : 6/11/2018 10:21:28

Page 5 of 7



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529010
Client No.: 35254-56b

Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²): 100
Location: Cargo Hold-Aft Stbd Electrical Box

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Lab No.: 6529011
Client No.: 35254-57b

Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): NA

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²): Blank
Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Please refer to the Preface of this report for further information regarding your analysis.

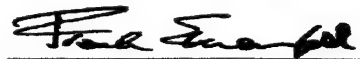
Date Received: 6/8/2018

Date Analyzed: 06/08/2018

Signature: 

Analyst:

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:21:28

Page 6 of 7



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765



North West
Environmental Group Ltd.

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Air Sample Report

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 11, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	VV	<	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	VV	<	Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	VV	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSCB Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS™
AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VV	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VV	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VV	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VV	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml
 AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml
 OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)
 AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.
 QC - quality control: Blank field testing for quality assurance.
 OL - overloaded: This is when the air sample is so overloaded that it is unreadable.
 VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)
 V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)
 Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



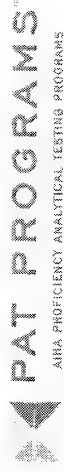
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529001

Client No.:35254-47b

Location: Gym-Top Of Electrical Cabinet

Area (cm²): 100Density (s/mm²): 38.5Concentration (s/cm²): 1230

Asbestos Type(s): Chrysotile

Lab No.:6529002

Client No.:35254-48b

Location: Gym-Top Of Light

Area (cm²): 100Density (s/mm²): 115Concentration (s/cm²): 2780

Asbestos Type(s): Chrysotile

Lab No.:6529003

Client No.:35254-49b

Location: Winch Room-Top Of Aft Heater

Area (cm²): 100Density (s/mm²): 106Concentration (s/cm²): 25400

Asbestos Type(s): Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

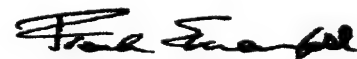
Date Received: 6/8/2018

Date Analyzed: 06/08/2018

Signature:

Analyst:

Approved By:



Frank E. Ehrenfeld, III

Laboratory Director

Dated : 6/11/2018 10:21:27

Page 1 of 5

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529004
Client No.:35254-50b

Location: Winch Room-Top Of Stbd Aft Shelf
Area (cm²): 100
Density (s/mm²): 106

Concentration (s/cm²): 12700
Asbestos Type(s): Chrysotile

Lab No.:6529005
Client No.:35254-51b

Location: Boson Stores-Top Of Electrical Box
Area (cm²): 100
Density (s/mm²): <9.62

Concentration (s/cm²): <2310
Asbestos Type(s): None Detected

Lab No.:6529006
Client No.:35254-52b

Location: Boson Stores-Top Of Unused Cable
Tray
Area (cm²): 100
Density (s/mm²): 9.62

Concentration (s/cm²): 2310
Asbestos Type(s): Chrysotile

Lab No.:6529007
Client No.:35254-53b

Location: Cargo Hold-Forward Port Shelf
Area (cm²): 100
Density (s/mm²): <76.9

Concentration (s/cm²): <1850
Asbestos Type(s): None Detected

Lab No.:6529008
Client No.:35254-54b

Location: Cargo Hold-Forward Stbd Cable
Shield Plate
Area (cm²): 100
Density (s/mm²): 38.5

Concentration (s/cm²): 3700
Asbestos Type(s): Chrysotile

Lab No.:6529009
Client No.:35254-55b

Location: Cargo Hold-Aft Port Yellow Lockout
Box
Area (cm²): 100
Density (s/mm²): 38.5

Concentration (s/cm²): 9250
Asbestos Type(s): Chrysotile

Lab No.:6529010
Client No.:35254-56b

Location: Cargo Hold-Aft Stbd Electrical Box
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018

Date Analyzed: 06/08/2018

Signature: _____

Analyst: _____

Approved By: _____

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/11/2018 10:21:27

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust
Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6529011
Client No.: 35254-57b


Location: Field Blank
Area (cm²): Blank
Density (s/mm²): <19.2

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

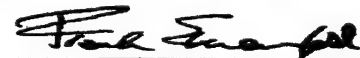
Date Received: 6/8/2018

Date Analyzed: 06/08/2018

Signature: 

Analyst:

Approved By:



Frank E. Ehrenfeld, III

Laboratory Director

Dated : 6/11/2018 10:21:27

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers.

Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

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Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/11/2018 10:21:27

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

CCGS-NGCC, Bartlett Chief Officer

From: CCGS-NGCC, Bartlett Captain
Sent: May-29-18 2:12 PM
To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: FW: Bartlett Results
Attachments: 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1 V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]
Sent: May-29-18 2:07 PM
To: Ormiston Glenn; Jersch Russell; Bennett Bob; Wright Edward; Chaikin Gabriel; McNish Joanne; CCGS-NGCC, Bartlett Captain
Cc: Carrigan Kevin
Subject: FW: Bartlett Results

FYI, my note to Director of CGSS in HQ.
Bob

From: Ayres, Bob
Sent: May-29-18 1:45 PM
To: Richardson, Dena
Subject: FW: Bartlett Results

Hi Dena,
Just wanting to give you a heads up on the most recent development with the Bartlett and asbestos. FYI, the acting RD Fleet was also planning to notify HQ (DG Ops and perhaps others).

A note of history – the ship was built in 1969 and no doubt had extensive asbestos containing materials (ACM) used in her construction. Asbestos surveys over the years and abatement/remediation efforts have confirmed this.

Asbestos concerns were raised in early 2018 and documented on a series of IIRs, with a focus area being wiring in the bridge consoles that had not previously been identified as ACM. The ship is two weeks into a refit at Vic Base (with those bridge consoles being among the work) and additional tests were ordered a week ago with results back today.

As you will see by the email below there were both bulks samples and wipe tests. While the analysis of bulk samples came back as negative the dust wipe samples from a variety of locations came back as positive for ACM to varying degrees.

- The bulk tests were done on brake bands, insulations and gaskets and all came back as none detected.
- The wipe tests were done in a variety of wire-ways, deck-heads, cavities, and consoles and results ranged from none detected to high concentrations (as per below)

Shortly after this recent result became known the ME personnel notified the ship, myself and Fleet Management. We met and discussed actions, which included;

- the stop of any work with potential to disturb ACM (this includes refit work with contractors)
- ME has arranged for environmental specialist consultants to attend the ship tomorrow for further review, assessment and determination of a way forward

- The Bartlett CO, acting RD Fleet and myself met with all Bartlett crew immediately following the meeting to present the news to crew and take any questions – there were some questions but the crew appeared to take it in stride, with the understanding that we should know more tomorrow and in the days following.

Important to note is that air tests were conducted throughout the ship, including underway, after the findings earlier this year and all came back as negative.

There is supposition that the dust sampled in this most recent testing has been present since the time of earlier remediation efforts (perhaps going back decades). I feel this is probable but it is also important to note that some dust with ACM was identified in previously cleaned spaces.

I am assuming you may hear of this so wanted to make sure you were aware. I'll keep you advised.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: [REDACTED]
E-mail: bob.ayres@dfo-mpo.gc.ca

From: Chaikin, Gabriel
Sent: May-29-18 12:47 PM
To: Ayres, Bob
Subject: FW: Bartlett Results

Bob,

Here are the sample results for the Bartlett. There is quite a bit to unpack here. The summary below is a good start. Note the usual blanket statements and the beginning and the end.

Overall this is not good news. Our hope is that the majority of the findings are very old and have not posed a risk to the crew. The previous air sample results would support that hope as they were all negative for ACM. Of course some of the areas where these sample wipes were taken, were cleaned during the last refit. This shows that indeed there is a lack of encapsulation.

Our next plan will be air sampling throughout the vessel, followed by cleaning, encapsulation and remediation.

Regards,

Gabriel Chaikin
Marine Engineering | Ingénierie navale
(250) 363-0228

From: [REDACTED]
Sent: 2018-May-29 9:46 AM
To: Chaikin, Gabriel
Cc: [REDACTED]
Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

1. The following areas were found to have results within the expected range (1-10,000 structures/cm²):
 - a. Bridge – fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) – logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
2. Moderate range (> 10,000 – 50,000 s/cm²):
 - a. Bridge – mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck – stb aft alleyway deckhead cavity
 - e. N bridge deck – bridge deckhead cavity
3. Elevated range (> 50,000 – 100,000 s/cm²):
 - a. Bridge – fwd/port console
 - b. Bridge – Fwd middle console
 - c. MCR – port side top of ducting
 - d. Upper deck – aft oilers cabin deckhead cavity
 - e. Gym – top of electrical cabinet
4. High range (> 100,000 s/cm²):
 - a. Bridge – fire panel console (mid port console)
 - b. AMS wireway above sewage tank
 - c. MER wireway adj. escape hatch
 - d. Upper deck – stbd aft watertight door deckhead cavity

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting lead-containing paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



Project Manager
North West Environmental Group Ltd.
C. [REDACTED]

From: [REDACTED]
Sent: May 29, 2018 8:43 AM
To: 'Chaikin, Gabriel' <Gabriel.Chaikin@dfo-mpo.gc.ca>; [REDACTED]
Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent – pending any emergencies we should be able to send it out around noon. I'll keep you updated.

Thanks for your patience,



Project Manager
North West Environmental Group Ltd.
C. 250-580-1473 (Primary)

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>
Sent: May 29, 2018 8:15 AM
To: [REDACTED]
Subject: Bartlett Results

Good day [REDACTED] and [REDACTED],

We are hoping to have the results of our dust wipes in order to proceed with our projects on board.

Thank you

Gabe.

Sent from my BlackBerry 10 smartphone on the Bell network.

Ryan, Sam

From: Richardson, Dena
Sent: Friday, June 1, 2018 3:18 PM
To: Ryan, Sam; Lick, Gregory
Cc: Pelletier, Mario; Ivany, Gary
Subject: FW: Bartlett ACM meeting

Good Afternoon,

The below is a summary of the Asbestos Containing Materials (ACM) meeting that took place on the Bartlett yesterday. The majority of the refit work has been halted as remediation efforts take place. The crews have been actively involved in the discussions with CCG as well as Health Canada and BC Safe. workplace. Further assessment will be carried out and I will keep you informed of how this progresses.

Thank you,
Dena

From: Ayres, Bob
Sent: Thursday, May 31, 2018 7:58 PM
To: McNish, Joanne <Joanne.McNish@dfo-mpo.gc.ca>; Ormiston, Glenn <Glenn.Ormiston@dfo-mpo.gc.ca>; Hunt, Cliff <Cliff.Hunt@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca) <BartlettCO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Chief Engineer (BartlettCE@ccgs-ngcc.gc.ca) <BartlettCE@ccgs-ngcc.gc.ca>; Western ROC Superintendent \ Surintendant ROC Ouest (DFO/MPO) <Western.Ops-Centre@dfo-mpo.gc.ca>; Jersch, Russell <Russell.Jersch@dfo-mpo.gc.ca>; Thirkell, Darcene <Darcene.Thirkell@dfo-mpo.gc.ca>; Granger, Louise Anne <LouiseAnne.Granger@dfo-mpo.gc.ca>; Readman, Tristan <Tristan.Readman@dfo-mpo.gc.ca>; Wright, Edward <Edward.Wright@DFO-MPO.GC.CA>; Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>
Cc: Carrigan, Kevin <Kevin.Carrigan@dfo-mpo.gc.ca>; Richardson, Dena <Dena.Richardson@dfo-mpo.gc.ca>
Subject: RE: Bartlett ACM meeting

Hello all,

The following are notes are prepared by VMM Gabe Chaikin and myself to summarize the meeting on board Bartlett this morning regarding recent asbestos developments on ship.

CCGS Bartlett is currently undergoing refit alongside at Victoria Base. The ship is known to have asbestos containing materials (ACM) and has a history of asbestos surveys and remediation efforts. Recent findings of ACM in bridge consoles in February 2018 lead to planned remediation / mitigation work for this refit. Additional tests both bulk sample and dust wipe were conducted last week by NW Environmental with results returned on May 29th indicating negative on the bulk samples but positive for ACM in many of the areas subject to dust wipe tests. These findings were discussed that day with the immediate decision to stop all work with potential to disturb ACM and a briefing was delivered by Commanding Officer to all crew. CCG ME arranged for this meeting to consider next steps.

Meeting convened on CCGS Bartlett at 0900 with representatives from the following;

- CCG ITS Marine Engineering (ME), Vessel Maintenance Manager (VMM)
- CCGS Bartlett Engineering Department – Chief and Senior
- CCG Safety and Security, Manager
- Public Works Contracting Officer
- Canadian Maritime Engineering (CME) – Primary Contractor
- Emery Electric Limited – subcontracted by CME for electrical work
- Northwest Environmental Group – asbestos consultants

- Quantum Murray Environmental – remediation company

Discussed at the outset of meeting were the recent history of asbestos findings on Bartlett and a variety of considerations for safety of personnel both CCG and contractor, the need for further assessment and testing to identify options for some or all of cleaning, removal, encapsulation and other mitigations as appropriate. Probable refit delay and program impacts were also noted.

Regarding the dust samples it was noted by the environmental consultant that ACM in dust samples do not necessarily correlate to air samples and that air samples taken, including in recent months have returned as negative for asbestos. While many of the dust wipes were taken in difficult to access areas (wire-ways, deck-heads) and may be very old residual materials (these were also noted as being waxy in nature), some of the positive samples come from more recently cleaned areas and indicate that dusts may have migrated and thus are more concerning.

A tour of the ship was undertaken to provide CCG personnel and contractors with a view of the known or suspected areas of concern.

- The Engineering and Electrical contractors were understanding of the situation and offered their expertise to assist where necessary (e.g. Emery Electric with cleaning behind panels in MCR).
- All contractors have been informed and work stopped. Expectation is that Emery and Finning work with the SSG may need to be paused for three weeks. Some CME work off ship can likely continue.
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- Quantum Murray is to provide estimates later today or tomorrow to ME with options including price and time estimates. VMM has estimated based on discussion to this point that the cleaning may be \$120-\$150 K if we do not lower deck-heads. Additional contract costs are not known but VMM suggests these may be significant.
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- Previously planned work to remediate the bridge consoles and move fire panel is expected to continue concurrent with these new developments.
- VMM estimates the need for an additional four weeks alongside. This estimate of course is preliminary.

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- Those prior could be considered to include; any persons who have crewed on the ship with the greatest potential risk being those with the longest term exposure to the areas of concern, presumably engineering or others whose work has required entry into the less accessible areas of the ship, with confirmed or probable ACM; E&I technicians or ME personnel who have worked in the consoles or other tight spaces; contractors who may have worked in these areas.
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- I would be hopeful that the risk of exposure is indeed low, even for those employees who may have worked most closely with these materials.

We will know more as these additional assessments and clean-up work is conducted.

Regards,
Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: [REDACTED]
E-mail: bob.ayres@dfo-mpo.gc.ca

From: Ayres, Bob
Sent: May-30-18 1:41 PM
To: Chaikin, Gabriel
Subject: RE: Bartlett ACM meeting

Thanks Gabe. I will plan to attend.
Bob

From: Chaikin, Gabriel
Sent: May-30-18 12:52 PM
To: Ayres, Bob
Subject: Bartlett ACM meeting

Hi Bob,

There is a meeting planned for tomorrow morning 9am.
We will start at the CME workshop on the jetty and then do a walk around the vessel. North West Environmental will be there. Quantum also which is an established long time local remediation company. They were the once choosen by CME to be thier subcontractor for this work.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

McNish, Joanne

From: Ormiston, Glenn on behalf of McNish, Joanne
Sent: Friday, June 1, 2018 3:31 PM
To: McNish, Joanne
Cc: Carrigan, Kevin
Subject: FW: Bartlett Crew

Joanne

Further to what is mentioned below.

- Spoke to Gabe Chaikin re removal of crew Monday evening. At this point it is a consideration. I requested that clarification as to funding to house crew during this period. Is this emergency refit funding? Once all factors are known then we can make more informed decision i.e., duration of work, refit priorities, ongoing work that crew can proceed with, leave considerations, availability of accommodation, type of accommodations, meal consideration etc.
- Carrigan, Ayres, Jersch, Bennet all advise of the current situation.
- Bartlett crew to do a refit work, leave and options assessment over the weekend.
- Crew only leaving the vessel due to the ability to double shift the remediation crew recommendation if accepted. First is a recommendation to escalate the cleaning process not an asbestos hazard.
- ROC looking at crewing support options within the operational fleet.
- More detail needs to tickle in before we carve out a plan of attack. Engineering Support and Bartlett Crew will up-date over the weekend when new information becomes available
- Situation on board is still stable.

Glenn

From: Jersch, Russell
Sent: Friday, June 1, 2018 2:36 PM
To: Ormiston, Glenn <Glenn.Ormiston@dfo-mpo.gc.ca>; McNish, Joanne <Joanne.McNish@dfo-mpo.gc.ca>
Cc: Granger, Louise Anne <LouiseAnne.Granger@dfo-mpo.gc.ca>
Subject: FW: Bartlett Crew

FYSA, the message received from the Maintenance Manager indicates that we should evacuate the vessel starting Monday evening to allow the contractors better access to the vessel.

Glenn and I will meet with the vessels management to discuss options and to just put a plan together if the need arises.

Russell

From: Chaikin, Gabriel
Sent: June-01-18 1:34 PM
To: Jersch, Russell
Subject: Bartlett Crew

Russell,

We are still waiting to hear back from the remediation company. We have asked for options in relation to double shifts with full access to the vessel as opposed to single shifts in specified areas with the crew remaining onboard. I believe we will find it advantageous to remove the crew from Monday evening onward. If the engineers could remain behind to

inventory type 2 and maintain a night watch that will be beneficial. We could also retain a set of deckhands or officers to continue with their tackle work and to make up the confined space rescue team if required.

Please call me if you would like to discuss. I hope to have a plan in place between CME and public works by late afternoon and confirmation of the plan by Monday. With any luck the team can be setting up on Monday ready to start work on Tuesday.

Regards,

Gabriel Chaikin

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering
Fisheries and Oceans Canada / Government of Canada
gabriel.chaikin@dfo-mpo.gc.ca / Tel: 250-363-0228

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale
Pêches et Océans Canada / Gouvernement du Canada
gabriel.chaikin@dfo-mpo.gc.ca / Tél. : 250-363-0228

Ayres, Bob

From: Ayres, Bob
Sent: Monday, June 4, 2018 2:36 PM
To: Chaikin, Gabriel
Subject: RE: Bartlett ACM meeting

Thanks Gabe,
Good suggestion – I'll check in with E&I regarding their group documentation strategy.
Bob

From: Chaikin, Gabriel
Sent: June-01-18 1:28 PM
To: Ayres, Bob
Subject: RE: Bartlett ACM meeting

Hi Bob,

Nice write up. Thank you very much for doing this.

One thing we may want to offer is a roadmap for the crew to follow to document their particular cases in regards to these findings. I believe E+I is moving ahead with group documentation.

Regards,

Gabriel Chaikin
Marine Engineering | Ingénierie navale
(250) 363-0228

From: Ayres, Bob
Sent: 2018-May-31 4:58 PM
To: McNish, Joanne; Ormiston, Glenn; Hunt, Cliff; CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca); CCGS-NGCC, Bartlett Chief Engineer (BartlettCE@ccgs-ngcc.gc.ca); Western ROC Superintendent \ Surintendant ROC Ouest (DFO/MPO); Jersch, Russell; Thirkell, Darcene; Granger, Louise Anne; Readman, Tristan; Wright, Edward; Chaikin, Gabriel
Cc: Carrigan, Kevin; Richardson, Dena
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Regards,
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Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: [REDACTED]
E-mail: bob.ayres@dfo-mpo.gc.ca

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Sent: May-30-18 1:41 PM
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Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.



EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order: 551806441
Customer ID: 55PAEC50
Customer PO: F1782-180965
Project ID:

Attention:

North West Environmental Group
201-415 Gorge Road East
Victoria, BC V8T 2W1

Phone: (250) 384-9695

Fax: (250) 384-9865

Received Date: 06/04/2018 9:31 AM

Analysis Date: 06/05/2018 - 06/06/2018

Collected Date: 05/31/2018

Project: 35254/CCGS Bartlett - General Hazmat Consulting

Test Report: Asbestos Analysis of Dust Samples Using Method ASTM 6480

Sample ID	Area Sampled (cm ²)	Asbestos Type	Asbestos Structures	Sensitivity (str/cm ²)	Concentration (str/cm ²)	Comments
35254-32b Winch Room - Top of Heater 551806441-0001	100	None Detected	<2.99	49200	<147000	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-33b Winch Room - Starboard Top Shelf 551806441-0002	100	None Detected	<2.99	1640	<4900	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-34b Bosons Stores - Top of Electrical Panel 551806441-0003	100	None Detected	<2.99	49200	<147000	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-35b Bosons Stores - Top of P.A. Box 551806441-0004	100	None Detected	<2.99	4920	<14700	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-36b Cargo Hold (Pt Forward)-Top of Speaker 551806441-0005	100	None Detected	<2.99	1640	<4900	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-37b Cargo Hold (Aft) - Top Shelf 551806441-0006	100	None Detected	<2.99	49200	<147000	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-38b Cargo Hold (Aft) - Deckhead Stantion 551806441-0007	100	None Detected	<2.99	49200	<147000	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-39b U Deck-Aft Oilers Cab -T of Mini-fridge 551806441-0008	100	None Detected	<2.99	1640	<4900	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-40b Upper Deck - First Aid - Top of Locker	100	Chrysotile	4	2150	8600	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.

EMSL maintains liability to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Mississauga, ON

Initial report from: 06/06/2018 14:03:33

Printed 6/6/2018 5:13:10PM

Page 1 of 3

001128

**EMSL Canada Inc.**

2756 Slough Street Mississauga, ON L4T 1G3

Phone/Fax: (289) 997-4602 / (289) 997-4607

http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order: 551806441**Customer ID:** 55PAEC50**Customer PO:** F1782-180965**Project ID:****Attention:**

North West Environmental Group
201-415 Gorge Road East
Victoria, BC V8T 2W1

Phone: (250) 384-9695**Fax:** (250) 384-9865**Received Date:** 06/04/2018 9:31 AM**Analysis Date:** 06/05/2018 - 06/06/2018**Collected Date:** 05/31/2018**Project:** 35254/CCGS Bartlett - General Hazmat Consulting**Test Report: Asbestos Analysis of Dust Samples Using Method ASTM 6480**

Sample ID	Area Sampled (cm ²)	Asbestos Type	Asbestos Structures	Sensitivity (str/cm ²)	Concentration (str/cm ²)	Comments
551806441-0009						
35254-41b Poop Deck-Steward Cab. (P-12) -TV Shelf 551806441-0010	100	None Detected	<2.99	2150	<6430	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-42b Poop Deck-3RD Officer-Top of Mini-fridge 551806441-0011	100	Chrysotile	<2.99	5370	<16100	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-43b Boat Deck - Chief Engineer -Top of Shelf 551806441-0012	100	None Detected	<2.99	5370	<16100	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-44b Boat Deck-Com. Officer-Top of UPS U 551806441-0013	100	None Detected	<2.99	5370	<16100	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-45b Stack- Top of Port Supply Air Plenum 551806441-0014	100	Chrysotile	97	53700	5210000	Due to excessive particulate the target analytical sensitivity of 260 str/cm ² was not reached.
35254-46b Field Blank 551806441-0015		None Detected	<2.99			Blank

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Samples analyzed by EMSL Canada Inc. Mississauga, ON

Initial report from: 06/06/2018 14:03:33

Printed 6/6/2018 5:13:10PM

Page 2 of 3

001129

**EMSL Canada Inc.**

2756 Slough Street Mississauga, ON L4T 1G3

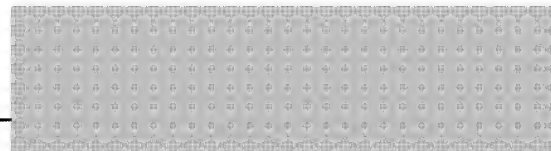
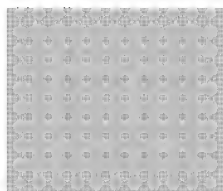
Phone/Fax: (289) 997-4602 / (289) 997-4607

<http://www.EMSL.com> / torontolab@emsl.com**EMSL Canada Order:** 551806441**Customer ID:** 55PAEC50**Customer PO:** F1782-180965**Project ID:****Attention:** Shaun Craveiro

North West Environmental Group

201-415 Gorge Road East

Victoria, BC V8T 2W1

Phone: (250) 384-9695**Fax:** (250) 384-9865**Received Date:** 06/04/2018 9:31 AM**Analysis Date:** 06/05/2018 - 06/06/2018**Collected Date:** 05/31/2018**Project:** 35254/CCGS Bartlett - General Hazmat Consulting**Test Report: Asbestos Analysis of Dust Samples Using Method ASTM 6480****Analyst(s):**

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Initial report from: 06/06/2018 14:03:33

Printed 6/6/2018 5:13:10PM

Page 3 of 3

001130

CCGS-NGCC, Bartlett Chief Officer

From: CCGS-NGCC, Bartlett Captain
Sent: June-06-18 4:49 PM
To: McNish Joanne
Cc: Jersch Russell; Ayres Bob; ' (ROCSupt@dfo-mpo.gc.ca)'; CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: FW: Bartlett Wipe Results
Attachments: 551806441_003.pdf

Joanne;

For your awareness.

Attached asbestos wipe test results that were conducted last week prior to clean-up commencing.

As expected small amounts detected in sick bay, 3rd Officer cabin. Small amounts likely tracked into the cabins on clothing during the course of normal work. These will be mitigated during the final cabin wipe down.

Large amounts detected in the stack flats. 5 million str/cm2.

These amounts are likely left after the old exhaust lagging was removed and replaced with non-asbestos materials.

Bob's and Russell,

There will be a meeting between Marine Engineering, abatement contractor, and consultant on board Bartlett tomorrow to discuss a way forward.

You are more than welcome to attend. We will advise of timing.

Mike

Captain Mike McCullagh

Commanding Officer, CCGS Bartlett

Email: BartlettCO@bar.ccs-ngcc.gc.ca

Cell:

Tellular:

Victoria CG Base Landline: 250.480.2692

Iridium Voice:

Iridium Data:

Mailing Address:

25 Huron Street

Victoria BC V8V 4V9



Gouvernement
of Canada

Gouvernement
du Canada

Canada

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: June-06-18 4:16 PM

To: CCGS-NGCC, Bartlett Captain

Subject: FW: Bartlett Wipe Results

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: [REDACTED]
Sent: June-06-18 4:08 PM
To: Chaikin Gabriel
Cc: [REDACTED]
[REDACTED] CCGS-NGCC, Bartlett Chief Engineer
Subject: Bartlett Wipe Results

Good afternoon, please find attached the wipe results from last week's sampling. Comments:

1. We will redo testing in the forward compartments to confirm that asbestos is not present. These samples did not meet the sensitivity of the analytical method and there is the potential that asbestos fibres might be present.
 2. Asbestos was found in dust in the First Aid Room and 3rd Mate's cabin. Suggest a clean of all cabins and that all linens be washed at a facility set up to launder asbestos-contaminated linens.
 3. High level of asbestos fibres in the stack. Fully cleaning this space will likely cause significant impacts to the schedule and budget. Suggest a bulk-out removal of gross contamination. Workers entering the stack will have to follow asbestos protocols. Air testing in the Engine room below have not indicated any exceedences.
- Please let me know if you have any questions or concerns.

Best,

[REDACTED]
Project Manager
North West Environmental Group Ltd.
250-580-1473

Ayres, Bob

From: [REDACTED]
Sent: Thursday, June 7, 2018 4:40 PM
To: Ayres, Bob; cole.ramshaw@ccgs-ngcc.gc.ca
Subject: Re: Bartlett

Thanks for the quick response Bob.

I spoke with WCB after I emailed you. They directed me to their Exposure Registry Program (form 41M1).

<http://www.worksafebc.com/en/resources/health-care-providers/forms/exposure-registry-program-form-41m1?lang=en>

I am somewhat familiar with the form 6 from my OFA training, but I am unsure how to fill it out as "information only".

A meeting with the Dr. would be great.

Thanks,

[REDACTED]

On Thu, Jun 7, 2018, 3:22 PM Ayres, Bob, <Bob.Ayres@dfo-mpo.gc.ca> wrote:

Hi [REDACTED]

The opinion I had received earlier from Dr. Krawciw at Health Canada was that yes anyone who is concerned about their potential exposure should consider filing an information only claim with Worksafe. WCB form 7 for employer and form 6 for employee. If so these would be sent to Worksafe in the usual manner and then a copy provided to Health Canada so that it can be attached to the person's file, in case of an issue down the road. One can (should) also consider follow-up with their personal physician.

I spoke with the Dr. again this afternoon and there is a possibility he may be able to attend a crew meeting in the near future.

Feel free to call me directly if that might be helpful,

Bob

Bob Ayres

Manager, Coast Guard Safety and Security

Canadian Coast Guard - Western Region

25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636

Cell: 

E-mail: bob.ayres@dfo-mpo.gc.ca

From: 

Sent: Thursday, June 7, 2018 1:17 PM

To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>

Subject: Bartlett

Hi Bob,

In light of the recent findings on the Bartlett, I have concerns about long term asbestos and lead paint exposure on the Bartlett. Should I be contacting WCB about recording this?

Thanks for the help,

McNish, Joanne

From: McNish, Joanne
Sent: Friday, June 8, 2018 8:09 AM
To: Bennett, Bob
Subject: RE: Western Region - Fleet Readiness Profile

Agree with your interpretation, and agree it should not be issued until end of refit. Ops reduced (mission delay).

Currently refit.

June 29th – NINP and ops reduced.

Joanne

From: Bennett, Bob
Sent: Friday, June 8, 2018 7:22 AM
To: McNish, Joanne <Joanne.McNish@dfo-mpo.gc.ca>
Subject: Western Region - Fleet Readiness Profile

For your consideration.

Due to the ACM contamination on board Bartlett and unscheduled maintenance to remediate.

Recommend a change in the Fleet Readiness Profile from blue (Ops Normal) to condition white (Ops Restricted), depending on your interpretation our Fleet Readiness could also be changed to condition yellow (Ops. Reduced).

Please note that I've dated the change to our Readiness Profile June 29th, 2018 when Bartlett was scheduled to return to service.

This notification would also meet the criteria for issuing a NINP.

A2 Commissioner Critical Information Requirements (CCIRs):

- Damage or mechanical failure to a CCG vessel or aircraft which impacts its operational effectiveness or ability to complete assigned tasks.
- Any changes to Coast Guard Fleet Readiness Levels.

If you would like to proceed with the change to our Readiness Profile, I'll prepare a NINP for your approval.

Bob

McNish, Joanne

From: Bennett, Bob
Sent: Friday, June 8, 2018 8:37 AM
To: McNish, Joanne
Subject: FW: Health Canada - Asbestos discussion - Shop Lunchroom 1400

FYI - the Asbestos talk with Dr. K has been extended to both E & I and MCI work crews.

From: CCGS-NGCC, Bartlett Chief Officer [mailto:BartlettCHO@ccgs-ngcc.gc.ca]
Sent: June-08-18 8:24 AM
To: Ayres, Bob; Chaikin, Gabriel; Jersch, Russell; Bennett, Bob; CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Chief Engineer; Readman, Tristan; Specht, Rick; Lawson, Jesse
Subject: RE: Health Canada - Asbestos discussion - Shop Lunchroom 1400

Thank you for organizing this. The majority, if not all crew, of the Bartlett will be attending today.

Thank you again.

Chris Couch

Chief Officer, Red Crew, CCGS Bartlett

Email: BartlettCHO@ccgs-ngcc.gc.ca

Chief Officer Cell: [REDACTED]

Ship's Tellular: [REDACTED]

Iridium Satellite: [REDACTED]

Mailing Address:

25 Huron Street

Victoria BC

V8V 4V9

From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]
Sent: June-08-18 8:18 AM
To: Chaikin Gabriel; Jersch Russell; Bennett Bob; CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Chief Officer; Readman Tristan; Specht Rick; Lawson Jesse
Subject: Health Canada - Asbestos discussion - Shop Lunchroom 1400

Hello all,

As noted below, we've asked Dr. Krawciw to attend at Vic Base today at 1400 to discuss the asbestos concerns related to the CCGS Bartlett.

As E&I technicians may have similar concerns due their work on CCG ships and MCI employees also may have potential exposure due their own work environments we've extended the invitation there as well.

The meeting will take place in the shops lunchroom which will allow room for any who wish to come and hear the discussion or ask a related question.

Regards,
Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: [REDACTED]
E-mail: bob.ayres@dfo-mpo.gc.ca

From: Ayres, Bob

Sent: Thursday, June 7, 2018 7:29 PM

To: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>; Jersch, Russell <Russell.Jersch@dfo-mpo.gc.ca>; Bennett, Bob <Bob.Bennett@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca) <BartlettCO@ccgs-ngcc.gc.ca>

Subject: Re: Health Canada

Dr. K has confirmed that 1400 tomorrow works for him to come and meet with Bartlett crew.

I will look to confirm a room in the morning. Is it fair to assume the majority of crew will attend?

Also as discussed Gabe can we confirm that NW can take part in that.

Unless there is objection I will also extend an invitation to E&I and MCI in case some of their group are interested in attending.

Regards,
Bob

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Ayres, Bob

Sent: Thursday, June 7, 2018 3:33 PM

To: Chaikin, Gabriel; Jersch, Russell; Bennett, Bob; CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca)

Subject: Health Canada

Hi all,

I let Russell know that I spoke with Dr. Krawciw and he is going to get back to me this evening with confirmation (hopefully, as they have some juggling to do) that he can attend tomorrow to speak with crew. When I get word I will let you know.

Gabe, if he can it will likely be in the afternoon – would NW Env also be available then to speak jointly? I assumed so.

Thanks,
Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region

25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636

Cell: [REDACTED]

E-mail: bob.ayres@dfo-mpo.gc.ca

No further information has been removed or severed from this page

Ayres, Bob

From: Ayres, Bob
Sent: Monday, June 11, 2018 3:20 PM
To: Jersch, Russell
Subject: FW: Bartlett Asbestos

FYI, regarding request for hygienist input.
Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>
Sent: Monday, June 11, 2018 2:47 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: RE: Bartlett Asbestos

Thanks Bob – I've forwarded this along – please check back with me in 2 weeks if you haven't heard from me or someone at Health Canada before then.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)
Santé Canada / Gouvernement du Canada
don.krawciw@hc-sc.gc.ca / Tél. : 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [<mailto:Bob.Ayres@dfo-mpo.gc.ca>]
Sent: 2018-06-11 12:47 PM
To: Krawciw, Don (HC/SC)
Subject: Bartlett Asbestos

Hello Don,
Apologies for delay in getting this to you today – morning got busy.

Attached are the reports from testing on Bartlett.

1. AB1 is the bulk sample from May 17th
2. ABWIPE1 is wipe test from various locations on board – report date May 23rd
3. Pb1 is the lead sample from paint on metal – report date May 21st
4. 551806441 is the more recent dust sampling (collected May 31st) which includes the results from the stack (funnel) on Bartlett

As discussed we'd be very interested in the assistance of your industrial hygienist in providing a review of these sampling results.

Any expert of informed opinion would be welcome with regard interpretation of the numbers in the various reports and the likely meaning of these to our employees who have potentially been exposed.

Cleaning and remediation efforts are currently underway. We are considering how best to communicate further to employees past and present regarding potential exposure and documenting of this potential in case (hopefully not) of need for future claim etc.

Thanks again for coming down and speaking with our people on Friday. It was very helpful.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security

Canadian Coast Guard - Western Region

25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636

Cell: [REDACTED]

E-mail: bob.ayres@dfo-mpo.gc.ca

CCGS-NGCC, Bartlett Captain

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-11-18 9:13 AM
To: CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: FW: Bartlett cabin clearances
Attachments: 35254 AA7 V1.0 2018-06-11 - CCGS Bartlett.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: [REDACTED]
Sent: June-11-18 8:33 AM
To: Chaikin Gabriel; CCGS-NGCC, Bartlett Chief Engineer; Chris Igwe
Cc: [REDACTED]
Subject: Bartlett cabin clearances

Good morning, air clearances for cabins attached, all below detection limit. Enclosures for cabins already inspected can be removed.

J

Sent from my Samsung Galaxy smartphone.



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.:35254-91b	Location: Upper D: Laundry Room-HVAC Duct Area (cm ²): 100 Density (s/mm ²): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected
Lab No.:6541815 Client No.:35254-92b	Location: Boat D: Fan Room-HVAC Duct Area (cm ²): 100 Density (s/mm ²): 15.4	Concentration (s/cm ²): 14800 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541816 Client No.:35254-93b	Location: Wheelhouse-HVAC Duct Area (cm ²): 100 Density (s/mm ²): 115	Concentration (s/cm ²): 55500 Asbestos Type(s): Chrysotile Amosite
Lab No.:6541817 Client No.:35254-94b	Location: Poop D: Alley Adjacent Galley-Main Recirc Duct Area (cm ²): 100 Density (s/mm ²): 30.8	Concentration (s/cm ²): 29600 Asbestos Type(s): Chrysotile
Lab No.:6541818 Client No.:35254-95b	Location: Upper D: Cabin U-38 Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): 7.69	Concentration (s/cm ²): 3700 Asbestos Type(s): Chrysotile
Lab No.:6541819 Client No.:35254-96b	Location: Upper D: 3rd Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): 15.4	Concentration (s/cm ²): 3700 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541820 Client No.:35254-97b	Location: Boat D: Chief Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Signature:
Analyst:



Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:55



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

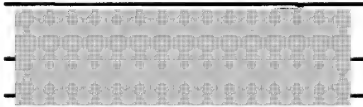
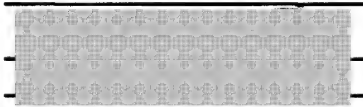
Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

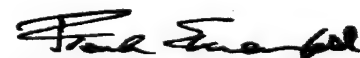
TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541821 Client No.:35254-98b	Location: Field Blank Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <185 Asbestos Type(s): None Detected
Lab No.:6541822 Client No.:35254-102b	Location: Stack-Stbd Air Supply Plenum Area (cm ²): 100 Density (s/mm ²): 692	Concentration (s/cm ²): 6660 Asbestos Type(s): Chrysotile
Lab No.:6541823 Client No.:35254-103b	Location: Stack-Main Engine Water Jacket Tank Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <617 Asbestos Type(s): None Detected
Lab No.:6541824 Client No.:35254-104b	Location: Stack-Exhaust Pipe Support Strut Area (cm ²): 100 Density (s/mm ²): 288	Concentration (s/cm ²): 6940 Asbestos Type(s): Chrysotile
Lab No.:6541825 Client No.:35254-105b	Location: Stack-Bulkhead Stiffener Area (cm ²): 400 Density (s/mm ²): 288	Concentration (s/cm ²): 1730 Asbestos Type(s): Chrysotile Tremolite
Lab No.:6541826 Client No.:35254-106b	Location: Field Blank Area (cm ²): Blank Density (s/mm ²): <7.69	Concentration (s/cm ²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018
Signature: 
Analyst: 

Approved By:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:55

Page 2 of 4

001143



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/28/2018 6:30:55

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001144



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

CCGS-NGCC, Bartlett Captain

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-11-18 9:16 AM
To: CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer
Subject: FW: Bartlett - Wipe Results update
Attachments: COA_565543.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Senior to post sign limiting access to compartment, and not to disturb heavily soiled areas.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: [REDACTED]
Sent: June-11-18 8:01 AM
To: Chaikin Gabriel; [REDACTED]
Cc: Chris Igwe; CCGS-NGCC, Bartlett Chief Engineer; Joel Shandro; Shaun Craveiro; Grant Rogers
Subject: Bartlett - Wipe Results update

Good morning, we just received the results for wipe samples collected in the Winch Compartment, Bosun's Stores, and Cargo Hold.

1. Winch compartment: moderate range, chrysotile. Samples were collected from heavily soiled surfaces that were not cleaned during the refit work. Suggest that touch up cleaning be conducted in this space, focussing on heavily soiled surfaces.
2. Gym: expected ambient range and much improved compared to pre-clean tests. Air clearances were below the limit of detection. Going forward: monitor and clean regularly with HEPA vacuum.
3. Bosun's Stores: expected ambient range. Suggest this is a low priority area. Going forward: Monitor and clean regularly with HEPA vacuum, do not store clothing that is potentially contaminated, and have procedures in place for removing materials/equipment (particularly materials/equipment that has accumulated dust).
4. Cargo Hold: expected ambient range, 2 out of 4 found chrysotile. Suggest this is a low priority area. Going forward: Monitor and clean regularly with HEPA vacuum and have procedures for removing stored material/equipment. Samples collected from heavily soiled surfaces.

We will look to CME/CCG to provide final direction with regard to whether these spaces will undergo a clean and to what extent.

Please let me know if you have any questions.

Best,

[REDACTED]
Project Manager
North West Environmental Group Ltd.

s.19(1)

Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vw	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	W	<	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	W	<	Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	W	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIIA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

2/4

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	W	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	W	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	W	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	W	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	AC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

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***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml
 AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml
 OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)
 AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.
 QC - quality control: Blank field testing for quality assurance.
 OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)
 V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)
 Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529001
Client No.:35254-47b

Location: Gym-Top Of Electrical Cabinet
Area (cm²): 100
Density (s/mm²): 38.5

Concentration (s/cm²): 1230
Asbestos Type(s): Chrysotile

Lab No.:6529002
Client No.:35254-48b

Location: Gym-Top Of Light
Area (cm²): 100
Density (s/mm²): 115

Concentration (s/cm²): 2780
Asbestos Type(s): Chrysotile

Lab No.:6529003
Client No.:35254-49b

Location: Winch Room-Top Of Aft Heater
Area (cm²): 100
Density (s/mm²): 106

Concentration (s/cm²): 25400
Asbestos Type(s): Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/11/2018 10:21:27

Page 1 of 5



9000 Commerce Parkway Suite B
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529004 Client No.:35254-50b	Location: Winch Room-Top Of Stbd Aft Shelf Area (cm ²): 100 Density (s/mm ²): 106	Concentration (s/cm ²): 12700 Asbestos Type(s): Chrysotile
Lab No.:6529005 Client No.:35254-51b	Location: Boson Stores-Top Of Electrical Box Area (cm ²): 100 Density (s/mm ²): <9.62	Concentration (s/cm ²): <2310 Asbestos Type(s): None Detected
Lab No.:6529006 Client No.:35254-52b	Location: Boson Stores-Top Of Unused Cable Tray Area (cm ²): 100 Density (s/mm ²): 9.62	Concentration (s/cm ²): 2310 Asbestos Type(s): Chrysotile
Lab No.:6529007 Client No.:35254-53b	Location: Cargo Hold-Forward Port Shelf Area (cm ²): 100 Density (s/mm ²): <76.9	Concentration (s/cm ²): <1850 Asbestos Type(s): None Detected
Lab No.:6529008 Client No.:35254-54b	Location: Cargo Hold-Forward Stbd Cable Shield Plate Area (cm ²): 100 Density (s/mm ²): 38.5	Concentration (s/cm ²): 3700 Asbestos Type(s): Chrysotile
Lab No.:6529009 Client No.:35254-55b	Location: Cargo Hold-Aft Port Yellow Lockout Box Area (cm ²): 100 Density (s/mm ²): 38.5	Concentration (s/cm ²): 9250 Asbestos Type(s): Chrysotile
Lab No.:6529010 Client No.:35254-56b	Location: Cargo Hold-Aft Stbd Electrical Box Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <925 Asbestos Type(s): None Detected

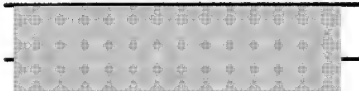
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/11/2018 10:21:27

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
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Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6529011
Client No.: 35254-57b

Location: Field Blank
Area (cm²): Blank
Density (s/mm³): <19.2

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

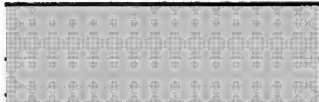
Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

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Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/11/2018 10:21:27



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
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Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/11/2018 10:21:27

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements. (<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529001
Client No.: 35254-47b
Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Area Sampled (cm²): 100
Location: Gym-Top Of Electrical Cabinet
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 1230
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 2
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 1230
Non-Asbestos Type(s):
SiMg - Talc
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6529002
Client No.: 35254-48b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 463

Area Sampled (cm²): 100
Location: Gym-Top Of Light
Asbestos Structures: 6
Structures < 5 Microns: 6
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 2780
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 3
Structure Density (s/mm²): 57.7
Structure Concentration (s/cm²): 1390
Non-Asbestos Type(s):
SiMg - Talc
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/11/2018 10:21:27

Page 1 of 7



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529003
Client No.: 35254-49b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Winch Room-Top Of Aft Heater
Asbestos Structures: 11
Structures < 5 Microns: 8
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 106
Structure Concentration (s/cm²): 25400
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 2
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 4630
Non-Asbestos Type(s):
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

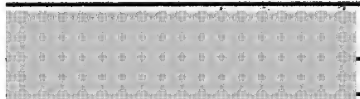
Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/11/2018 10:21:28

Page 2 of 7



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529004
Client No.: 35254-50b
Volume Filtered (mL): 4
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 1160

Area Sampled (cm²): 100
Location: Winch Room-Top Of Stbd Aft Shelf
Asbestos Structures: 11
Structures < 5 Microns: 11
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 106
Structure Concentration (s/cm²): 12700
Asbestos Type(s): Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <1160
Non-Asbestos Type(s): None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6529005
Client No.: 35254-51b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Boson Stores-Top Of Electrical Box
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Asbestos Type(s): None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s): None Detected

Micrograph Number:
EDXA Spectrum ID:

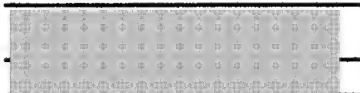
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/11/2018 10:21:28

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Client: North West Environmental Group Ltd.
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Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529006
Client No.: 35254-52b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Boson Stores-Top Of Unused Cable Tray
Asbestos Structures: 1

Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 9.62
Structure Concentration (s/cm²): 2310
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6529007
Client No.: 35254-53b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 1
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0130
Sensitivity (s/mm²): 76.9
Detection Limit (s/cm²): 1850

Area Sampled (cm²): 100
Location: Cargo Hold-Forward Port Shelf

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <76.9
Structure Concentration (s/cm²): <1850
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <76.9
Structure Concentration (s/cm²): <1850
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:

Dated : 6/11/2018 10:21:28

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Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529008
Client No.: 35254-54b
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Cargo Hold-Forward Stbd Cable Shield Plate
Asbestos Structures: 4
Structures < 5 Microns: 4
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 3700
Asbestos Type(s): Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s): None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6529009
Client No.: 35254-55b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Cargo Hold-Aft Port Yellow Lockout Box
Asbestos Structures: 4
Structures < 5 Microns: 3
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 9250
Asbestos Type(s): Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s): None Detected

Micrograph Number:
EDXA Spectrum ID:

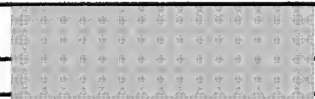
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/11/2018 10:21:28



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529010
Client No.: 35254-56b
Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Cargo Hold-Aft Stbd Electrical Box
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6529011
Client No.: 35254-57b
Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): NA

Area Sampled (cm²): Blank
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/8/2018
Date Analyzed: 06/08/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/11/2018 10:21:28

Page 6 of 7



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018
Report No.: 565543 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

CCG Marine Supt Western / GCC de l'Ouest Supt Marine (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Officer <BartlettCHO@ccgs-ngcc.gc.ca>
Sent: June-12-18 2:28 PM
To: Jersch, Russell
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Engineer
Subject: Exposure Registry Program
Attachments: Exposure Registry Program.pdf

Hello Russell Jersch,

Last week you mentioned an Occupational Health and Safety package would be prepared for the ship for our asbestos exposure. I realize crew change is quickly approaching (tomorrow), and there may not be an opportunity to get the forms before this. As an alternative, I could organize the WCB Registry forms for all the current crew and begin contacting previous crew members. I have also included this form for your records. The Health Canada doctor mentioned registering for the Health Canada Exposure program, but I have been unable to locate this form.

WCB Exposure Registry Program

<https://www.worksafebc.com/en/resources/health-care-providers/forms/exposure-registry-program-form-41m1?lang=en>

Thank you for the assistance.

Chris Couch

Chief Officer, Red Crew, CCGS Bartlett

Email: BartlettCHO@ccgs-ngcc.gc.ca

Chief Officer Cell: [REDACTED]

Ship's Tellular: [REDACTED]

Iridium Satellite: [REDACTED]

Mailing Address:

25 Huron Street

Victoria BC

V8V 4V9

Exposure Registry Program

If you have any questions regarding the completion of this form, please contact Prevention Support Services — Prevention Records at 604 276-3231.

select
one



Person submitting information*

Worker ☐

Employer ☐

Other ☐

* Indicates a mandatory field.

Have you been exposed to a harmful substance or agent at work?
If you have, you may be entitled to compensation as set out under section 6 of the *Workers Compensation Act* if you develop an occupational disease due to the exposure — now or in the future.

Due to the latency and long period of exposure required for the onset of some occupational diseases, WorkSafeBC has created this new exposure registry as a way for workers, employers, and others to register a worker's exposure to a harmful substance or agent at work. The information obtained through the registry will be kept as a permanent record of a worker's exposure.

If your exposure has resulted in medical treatment or time loss from work, please complete an application for compensation

Phone 1 888 WORKERS (1 888 967-5377) or #5377 for TELUS, Rogers, and Bell mobility customers, Monday to Friday, 8 a.m. to 4 p.m. PST

To report a serious incident or fatality

Phone 1 888 621-SAFE (7233) Monday to Friday, 8 a.m. to 4 p.m. PST, or toll-free 1 866 WCB-HELP (922-4357) after hours.

I understand the information on this form is collected, used, and disclosed under the authority of the *Workers Compensation Act* and the *Freedom of Information and Protection of Privacy Act*. I acknowledge that WorkSafeBC may disclose this information to the worker, the employer, or their respective representatives, or to others in accordance with the *Workers Compensation Act* and the *Freedom of Information and Protection of Privacy Act*.

Person submitting information*		Date of registration* (yyyy-mm-dd)	Has the employer been informed of the exposure?*
Worker <input type="checkbox"/>	Employer <input type="checkbox"/>	Other <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>

WORKER INFORMATION

* Indicates a mandatory field

Worker's last name*		First name*	
Mailing address line 1*			
Mailing address line 2		City*	
Country*	Province/State*	Postal code/Zip*	Phone number (8:30 a.m.-4:30 p.m.) (nnn nnn-nnnn nnnn)
Select:	Date of birth* (yyyy-mm-dd)		Date of hire* (yyyy-mm)
Gender*			
Male <input type="checkbox"/>	Female <input type="checkbox"/>		
Occupation*			

EMPLOYER INFORMATION

Firm name*				
Firm number	Employer contact last name		Employer contact first name	
Employer's mailing address line 1				
Employer's mailing address line 2				
Country*	Province/State*	Postal code/Zip	City*	
Select:			Phone number* (8:30 a.m.-4:30 p.m.) (nnn nnn-nnnn nnnn)	
Industry*				
Select:				
If other (or multiple industries), please specify				

SUBMITTER INFORMATION (if not the worker or employer)

Last name of contact person*		First name of contact person*	
Organization name			
Mailing address line 1*			
Mailing address line 2			
City*		Phone number (8:30 a.m.-4:30 p.m.) (nnn nnn-nnnn nnnn)	
Country*	Province/State*	Postal code/Zip*	
Select:			
Submission on behalf of*		Has the employer been informed of the exposure?*	
Worker <input type="checkbox"/> Employer <input type="checkbox"/>		Yes <input type="checkbox"/> No <input type="checkbox"/>	

If you're a worker or employer, the Submitter Information section will auto-populate. If you need to make changes, please go back to the Worker Information or Employer Information sections.

WORKPLACE EXPOSURE INFORMATION

Work incident location (address, city, province) and where incident occurred* (e.g., shop floor, lunchroom, parking lot)	
Start date of exposure* (yyyy-mm-dd)	End date of exposure* (yyyy-mm-dd)
How did the exposure occur?*	If other (or multiple occurrences), please specify
Select:	
Briefly describe the exposure*	
What was the worker exposed to?*	If other (or multiple exposures), please specify
Select:	
Was personal protective equipment required?*	Was personal protective equipment provided?*
Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>
Was personal protective equipment used?*	When you're finished completing this form, use the "Validate & save" button below.
Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>	Once validated and saved, use the "Submit" button.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-13-18 4:58 PM
To: CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Captain
Subject: FW: CE H/O Notes
Attachments: HON 2018-06-13 Red.pdf

Importance: High

FYI. Attached CE H/O Notes outlines a lot of asbestos work that happened over previous 4 weeks.

Draft ACM IIR contains similar outline.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-13-18 4:26 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Subject: CE H/O Notes
Importance: High

See attached HO notes

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB



CCGS BARTLETT

PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

Crew		Chief Engineer	Matt Jackson
Senior Engineer	Steve Buss	QA Engineer	Colin Battand
Second Engineer	Nobuo Gondo May 24-June 2 Onboard Neocaligus	Oiler #1	Carl Olson
Third Engineer May 16-21	Brian Blount	Oiler #2	Lorne Robertson
Third Engineer May 22-June 13	James Rottino	Cadet #1	Jaxon Stel
		Cadet #2	Brendan Wootton
Period Start	16-05-2018	Period End	13-06-2018

Defects & Immediate Concerns

See below, Senior Engineer's HON, Contracted Items Tracking Sheet, Contracted Piping Items Tracking Sheet, Self-Refit List, Vessel Specific Asbestos Management Plan, Ongoing Asbestos IIR, Master Defect List, and MAINTelligence

Machinery Performance & Repairs

Propulsion Machinery

SME

-JW is noticeable lighter in color despite acceptable Maxigard concentration tests.

Stern Tubes

-Tightened and signs posted in MCR and at hand wheels.

Ship Service Generators

Shore Power Kiosk

-No 480VAC available at any Kiosk. Cord end from Powecon (AMS), used to make adapter for the CME welding power supply.

Auxiliary Machinery

Compressed Air

-Harbour air compressor unloader valve diaphragm replaced.

Fire Main

-all removed fire stations have blanks fitted. More fire stations were taken out of service than planned. CME was able to test and return to service as many as possible before being shut down due to ACM concerns. Currently out of service: fire station aft of bridge port and stbd side (station #14/15), aft starboard fire station in the AMS (ready to reinstall once CME has access) and fwd starboard fire station in the ER.

Fuel Log

-Provo crew changed the sounding tables back when they joined in 2011. Looking at the old fuel logs 85cm was 95%. See SR list for details.

Galley

-Looked into installing the new wash down and fan controller but ran out of time. This is not a drop in replacement and some tracing of wires will be required.



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PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

Electrical Generation & Distribution & Electronics

Phone System

-IP Epic center console reconnected by VIEW. They would like to be informed next time the PBX system has problems. I reset the system just after crew change.

Deck Machinery

Derrick

-De-rigged by deck crew. Inspections completed but no SSGs available to re-rig.

ISM/Safety/TC

Asbestos

-Limited Hazardous Materials Assessment results returned with varying levels of asbestos dust in the spaces tested. Most the bridge consoles despite the cleaning are still contaminated. Contamination not nearly the same level as before. These spaces will have to be treated as moderate risk procedures.

-Air sampling was performed in the locations which dust wipes returned showing contamination. All results were below the threshold all though the AMS and MCR samples were contaminated with welding fumes. They were resampled but for a short duration.

-Fire panel insert installed in the wheel house console. Fire panel was cleaned with the help of George. Tested and back operational.

-Stbd manhole cover on the bridge void space removed and modified with a vent port for the void negative pressure ventilation plan. A negative pressure machine is on order and should be arriving soon. The plan was to mount it inside the void space to create the negative pressure inside the wheelhouse consoles. Hard ducting to be sourced and installed (JB sheet metal). Not arranged yet. Looking at the console, I do not believe there will be a way to clean them to the point they could be accessed without precautions and PPE.

-Six sampling pumps and 100 TEM cassettes are being purchased by Marine Engineering for onboard testing.

-The Marine Superintendent and Manager of Safety and Security are going to provide information so employees can identify with Worksafe BC in their Exposure Registry Program. This will document their potential exposure in case of future health difficulties. There will also be a method of recording the potential exposure with Health Canada (same files as our seagoing medicals).

IIR Asbestos Details So Far:

May 15-17, 2018 - Prior to the alongside contracted self-refit period, a Limited Hazardous Materials Assessment Survey was conducted by Northwest Environmental Group (NWE). The survey included bulk sampling of suspected asbestos containing materials, paint chip samples testing for lead and Transmission Electron Microscopy (TEM) dust wipe samples as a follow up to the Wheelhouse Console ACM Dust IIR Patrol 17-12. The bulk sampling and paint chip sampling were taken to cover the contracted refit work being performed by Canadian Maritime Engineering (CME).

May 29, 2018 - The results of the TEM dust wipe samples were received. Varying levels of asbestos structures contamination in dust were reported. NWE: "Asbestos Concentrations in dust has no correlation to the concentration in the air. This is dependent on several factors including impact/disturbance of the dust due to direct contact or vessel vibration.". Some of the dust sampled was adhered to the surface by an oily/greasy film. Locations sampled were not normally accessible: above cable trays in machinery spaces, top of ventilation ducts, above deckhead lining panels in accommodations, inside control consoles and on top of control cabinets. Positive results inside the consoles were expected as the cleanup in February 2018 was not expected to remove all asbestos containing dust. Upon receiving positive results for asbestos in the latent dust Marine Engineering, Regional Operations Center, contractors working onboard and ship's crew were informed of the results. Contractor and ship's crew work that could disturb the dust in the effected areas was stopped.

May 31, 2018 - Air sampling was performed by NWE in the locations which dust wipe samples results returned positive for asbestos. Results from the air sampling received were below either the limit of quantitation or detection. Additional dust wipe samples were taken to determine the extent and source of the asbestos dust contamination.

Meeting to determine the scope of work required and way to move forward with the clean up include the following parties:

- CCG ITS Marine Engineering (ME), Vessel Maintenance Manager (VMM)
- CCGS Bartlett Engineering Department – Chief and Senior
- CCG Safety and Security, Manager
- Public Works Contracting Officer
- Canadian Maritime Engineering (CME) – Primary Contractor



FISHERIES AND OCEANS
CANADIAN COAST GUARD

CCGS BARTLETT

PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

- Emery Electric Limited – subcontracted by CME for electrical work
- Northwest Environmental Group – asbestos consultants
- Quantum Murray Environmental – remediation company

June 1-June 4, 2018 No work conducted by contractors or crew that could disturb the dust. While mobilization and preparations for clean-up put into action.

June 5, 2018 Quantum Murray (QM) subcontracted by Canadian Maritime Engineering to perform clean up and encapsulation of AC dust with oversight of clean-up performed by NWE. QM setup and started work in Gym, Engine Room (ER), Machinery Control Room (MCR) and Auxiliary Machinery Space (AMS).

June 6, 2018 The dust wipe sample results taken on May 31 were received. Some samples had excessive particulate to obtain sufficient sensitivity to confirm the samples was asbestos free. These locations were resampled. The dust wipe sample from the top of the port forward supply fan plenum in the stack returned with high concentration of asbestos structures. Access to the stack was restricted. There is no current known ACM in the stack. The asbestos containing insulation on the exhaust uptake was removed in the 1999 VLE at Victoria Shipyard. QM continued clean up work in the Gym and AMS. Preclean-up preparations work in MCR and ER.

June 7, 2018 Gym visual inspection and air clearance passed by NWE. QM continued cleaning in AMS. Preparations for cabin clean up started.

June 8, 2018 QM clean up in cabins and AMS continued. Ambient and occupational air samples while cleaning cabins show no cause for concern.

June 9, 2018 Air Clearance 3rd Officer's cabin (only one pump used so results are not conclusive, it did return acceptable). Cabins cleaning almost completed. AMS cleaning continued. ER cleaning held off since the stack will require cleaning and encapsulating prior to working on the ER.

June 10, 2018 AMS cleaning continued. Cabins passed visual inspection by NWE. Air clearance sampling performed on 3rd Officers, Senior Engineer's and Aft Oiler's Cabin. Cleaning by Starboard Watertight Door and deckhead cavity in progress. Lounge cleaning started.

June 11, 2018 Air clearance results for cabins received. Dust wipe sample results from deck spaces received. Winchroom access limited due to elevated readings. Trained ship's crew inspected cabins for bulkhead panel screw holes. Any holes sealed with silicone caulk. Fluorescent lighting on Upper and Poop deck which were open to deckhead cavity sealed.

June 12, 2018 AMS clean completed. Visual inspection passed by NWE. Air sampling underway. Scaffolding set up in the ER and stack in preparation for cleaning. Bridge cleaning preparations started.

June 13, 2018 Visual inspection planned for of the AMS.

Suspected Causes

Asbestos containing dust in locations not expected or previously identified.

Theory for the source of source of contamination in the stack has been proposed as the expanded metal and porous (open) mineral wool insulation. The cladding and insulation is original and was not replaced when the asbestos containing exhaust uptake insulation was abated in the 1999 VLE at Victoria Shipyard. Over the 30 years from construction to removal, asbestos fibres released from the exhaust insulation may have embedded in the mineral wool. Through air movement and vessel vibration these fibres have shed coating surfaces inside the stack.

Incomplete identification and abatement of asbestos onboard. Previous abatement did not include removal/encapsulation of porous surfaces in close vicinity. Exposed mineral wool and bronze armored wire in cable trays may have prevented a thorough clean up. Subsequent air flow and vibration may have release previously embedded fibers. Some of the locations asbestos was found are inaccessible to normal cleaning. The deposits may have been from old work or poor workmanship during past remediation.

IIR

-3rd Officer's Cabin Holes in ACM Bulkhead Lining Panel

-completed and sent in.

-Aft Mast Ladder Wastage

-completed and sent in.

-Asbestos Containing Dust



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PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

-started but at the request of Safety and Security it is to be sent in as one complete IIR not multiple parts. Saved in Chief Engineer's drive refit folder.

CCRs

- Fire Panel Relocation CCR signed by Red Crew CO and CE.
- Bridge Void Negative Pressure CCR signed by Red Crew CO and CE.

Maintenance

- MAINTelligence updated by Senior Engineer.

Logistics

Personnel & Admin

- Both Engineering Cadets will be transferring to operational vessels. Brendan to the Tully June 19. Jaxon transfer to TBD.

Miscellaneous

- PS3 Blue-ray player in the Chief Engineer's cabin plugged in, firmware updated, and it is back operational.
- Condemned Transcube disposed of in the scrap metal bin after receiving approval from Schnitzer Steel. Their only concern was being able to inspect the tank to ensure it did not contain fuel or oil.
- high temp cutout switch on galley steamer replaced.

Required

- Portlight glass for EDG door (13" OD, 3/4" wire reinforced) -email out to Freeman Marine.
- INDUMAR and clamp type STOP-IT Patch Clamp
 - o p/n 110-0132-3 (1.5" pipe x 3")
 - o p/n 110-0238-3 (2" pipe X 3")
 - o p/n 110-0288-6 (2.5" pipe X 3")
- M14 x 2.0 threaded inserts for Hatch Cover Dog pin bolts *Western Equipment*
- 4x 19-20 ANCO window wiper blades for port and starboard window wipers on bridge.
- 1 roll High Pressure Fuel Tape (*Finning*)

On Order

- Heater 10kW 480 VAC Acklands
- Maneuvering Shaft Bushings - MAN (ME)
- Refrigeration Cooling Pump + Seal Kits - John Brooks Company Limited (ME)
- Cargo Hold Hatch Springs - replacements (last one used this patrol)
- 4x sounding tape refills (15' Chrome Clad/Nubian double duty, Lufkin) *Fastenal*
- 5 lifting diaphragm and 10 Non return valve VPC-V 034501705 *Jetvac*
- 2 Local control switch for WT doors (*ME*)
- Plasma Cutter Consumables (Thermal Dynamics CutMaster 51): *Praxair*
- Hand torch spares kit (5-0050)
- 1x 6" Duct Fans, 1x 10kW 480V 3ph Heater (Wire Leads) *Acklands Grainger*
- Pre-lube pump Bearings - Motion Canada
- Electric Wheel and Potentiometers - Jastram
- ER Ventilation Silencers -DB Noise Reduction



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PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

- Boiler Safeties – Serviced/Certified at Imperial Valve
- Negative Air Machine – Sycorp
- Capstan Electric Motor – Servicing at Emery

s.19(1)

Received

- 5 barrels TELUS 46 and 5 pails of Omalla 68 - Columbia Fuels
- Box of Provo Wallis Lips CPP parts – Dartmouth Coast Guard Base
- Gasoline transfer pump motor - Emery
- Sterntube cooling pump motor -Emery
- Derrick Avtron Drive Bridge Interface Board x2 Avtron DC0280-4DN3-C and fuse holders
- 1x bag of Fine Gravel, ¼" – 1/8" mesh *Cullen Water Systems*
- 1 gallon of D-1 and 1 Gallon of D-2 Lifstream (Depot)
- 1 explosion proof hand lamp F1755-18-0091
- Zinc bars for Anode 12' x ½" - 6' x ¾" – 6' x 3/8" Metal Supermarket Victoria
- Nextsand media, 2 cu/ft *Cullen Water Systems*
- Filters (6x BF7915)(6x G1 Fuel Filter)(6x BF7156) *Greenline/Coast Industrial*
- 2x Case of Zaal Noflex digester *Jetvac*
- HVAC Fan Impeller – Canadian Blower
- CO2 Strobe/Alarms and Box for Spares (2x P4RKA-R, 1xSA-WBB) *Westburne*
- 5L of Viscor Injector Calibration Fluid *Wilson and Proctor*
- Drum Cover, Magicwipes, etc *Acklands Grainger*
- HVAC Fan motor (ME) *Emery Electric*
- 50' Welding Extension Cord 240V *Praxair*
- Allpax Gasket Cutter centre pins, blades, and cutting board. *NE Seals*
- Felt Seals for Bridge Sliding Window *NE Seals*
- 2 AMTROL WX-252 pressure water tanks ANDREW SHERET LIMITED (ME) *IN TYPE II STORES*
- Sewage Overflow pump shaft and shaft's key *Jetvac (ME)*
- UPS Batteries – Canadian Energy

Chief Engineer – White Crew

Chief Engineer – Red Crew

Matt Jackson

581-888-7203 (EST: 3 hours ahead)

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-13-18 6:40 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Chief Officer
Subject: Asbestos IIR Draft
Attachments: Asbestos Containing Dust.pdf; Work Log May 15- June 13, 2018.docx
Importance: High
Follow Up Flag: Follow up
Flag Status: Flagged

All. Please see attached Asbestos IIR Draft Asbestos Work Log attached too.
We will have to update these documents regularly.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsgncc.gc.ca
BartlettChief@gmail.com for files above 5 MB

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|---|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) | |

B. General Information (Required)

Employer's (Department) Name Canadian Coast Guard		Site/Vessel Name (and official number) CCGS Bartlett																									
Date of Report (YYYY-MM-DD) 2018-06-13	Mailing Address 25 Huron Street Victoria BC V8V 4V9																										
Name of Responsible Supervisor Captain		Supervisor's Telephone # 250-213-3685																									
Organization (Select One)																											
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)																											
Regional Directorate (Select One)																											
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs																											
Program/Branch (Select One)																											
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<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business																										
<input type="checkbox"/> ILS																											

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname 	Given Name 	Initial(s) 	Age
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title 	
Years of experience in current position 			
Employment Status			
<input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor			
<input type="checkbox"/> Other (Specify) 			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Secured alongside Victoria Coast Guard Base.

Date of Incident (YYYY-MM-DD) 2018-05-29 Time of Incident (Local) 10:17

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Unknown dust identified as containing Asbestos

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

May 15-17, 2018 - Prior to the alongside contracted self-refit period, a Limited Hazardous Materials Assessment Survey was conducted by Northwest Environmental Group (NWE). The survey included bulk sampling of suspected asbestos containing materials, paint chip samples testing for lead and Transmission Electron Microscopy (TEM) dust wipe samples as a follow up to the Wheelhouse Console ACM Dust IIR Patrol 17-12. The bulk sampling and paint chip sampling were to taken to cover the contracted refit work being performed by Canadian Maritime Engineering (CME).

May 29, 2018 - The results of the TEM dust wipe samples were received. Varying levels of asbestos structures contamination in dust were reported. NWE: "Asbestos Concentrations in dust has no correlation to the concentration in the air. This is dependent on several factors including impact/disturbance of the dust due to direct contact or vessel vibration.". Some of the dust sampled was adhered to the surface by an oily/greasy film. Locations sampled were not normally accessible: above cable trays in machinery spaces, top of ventilation ducts, above deckhead lining panels in accommodations, inside control consoles and on top of control cabinets. Positive results inside the consoles were expected as the cleanup in February 2018 was not expected to remove all asbestos containing dust. Upon receiving positive results for asbestos in the latent dust Marine Engineering, Regional Operations Center, contractors working onboard and ship's crew were informed of the results. Contractor and ship's crew work that could disturb the dust in the effected areas was stopped.

May 31, 2018 - Air sampling was performed by NWE in the locations which dust wipe samples results returned positive for asbestos. Results from the air sampling received were below either the limit of quantitation or detection. Additional dust wipe samples were taken to determine the extent and source of the asbestos dust contamination.

Meeting to determine the scope of work required and way to move forward with the clean up include the following parties:



- CCG ITS Marine Engineering (ME), Vessel Maintenance Manager (VMM)
- CCGS Bartlett Engineering Department – Chief and Senior
- CCG Safety and Security, Manager
- Public Works Contracting Officer
- Canadian Maritime Engineering (CME) – Primary Contractor
- Emery Electric Limited – subcontracted by CME for electrical work
- Northwest Environmental Group – asbestos consultants
- Quantum Murray Environmental – remediation company

June 1-June 4, 2018 No work conducted by contractors or crew that could disturb the dust. While mobilization and preparations for clean-up put into action.

June 5, 2018 Quantum Murray (QM) subcontracted by Canadian Maritime Engineering to perform clean up and encapsulation of AC dust with oversight of clean-up performed by NWE. QM setup and started work in Gym, Engine Room (ER), Machinery Control Room (MCR) and Auxiliary Machinery Space (AMS).

June 6, 2018 The dust wipe sample results taken on May 31 were received. Some samples had excessive particulate to obtain sufficient sensitivity to confirm the samples was asbestos free. These locations were resampled. The dust wipe sample from the top of the port forward supply fan plenum in the stack returned with high concentration of asbestos structures. Access to the stack was restricted. There is no current known ACM in the stack. The asbestos containing insulation on the exhaust uptake was removed in the 1999 VLE at Victoria Shipyard. QM continued clean up work in the Gym and AMS. Preclean-up preparations work in MCR and ER.

June 7, 2018 Gym visual inspection and air clearance passed by NWE. QM continued cleaning in AMS. Preparations for cabin clean up started.

June 8, 2018 QM clean up in cabins and AMS continued. Ambient and occupational air samples while cleaning cabins show no cause for concern.

June 9, 2018 Air Clearance 3rd Officer's cabin (only one pump used so results are not conclusive, it did return acceptable). Cabins cleaning almost completed. AMS cleaning continued. ER cleaning held off since the stack will require cleaning and encapsulating prior to working on the ER.

June 10, 2018 AMS cleaning continued. Cabins passed visual inspection by NWE. Air clearance sampling performed on 3rd Officers, Senior Engineer's and Aft Oiler's Cabin. Cleaning by Starboard Watertight Door and deckhead cavity in progress. Lounge cleaning started.

June 11, 2018 Air clearance results for cabins received. Dust wipe sample results from deck spaces received. Winchroom access limited due to elevated readings. Trained ship's crew inspected cabins for bulkhead panel screw holes. Any holes sealed with silicone caulk. Fluorescent lighting on Upper and Poop deck which were open to deckhead cavity sealed.

June 12, 2018 AMS clean completed. Visual inspection passed by NWE. Air sampling underway. Scaffolding set up in the ER and stack in preparation for cleaning. Bridge

June 13, 2018 Visual inspection of the AMS.

Reports attached:

- Limited Hazardous Materials assessment CCGS Bartlett
- NWE Bulk Sample Report
- iATL dust wipe sample results for wipes taken May 15-17, 2018
- NWE air sample results May 31, 2018
- NWE scope of work for Dust Clean-up in Compartments on the CCGS Bartlett: June 2018 Draft
- ESML dust wipe sample results for wipes taken May 31, 2018
- iATL dust wipe sample results for wipes taken June 6, 2018
- NWE air sample results (last set so it covers the overall project)
-
- NWE Air/visual clearance documents yet to be received.
-

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident? ☒ Yes ☐ No

Specify

The initial investigation into the Hazardous Materials on-board was part of the risk assessment process prior to the alongside contracted refit period. This survey was conducted by Northwest Environmental starting on May 15 and finished on May 17.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐ Yes ☒ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions

- ☐ Bypassing safety devices
- ☐ Failure to check or monitor
- ☐ Failure to communicate/coordinate
- ☐ Failure to follow procedure/policy
- ☒ Failure to identify hazard/risk
- ☐ Failure to react/correct
- ☐ Failure to service equipment properly
- ☐ Failure to use PPE
- ☐ Failure to warn or secure
- ☐ Horseplay
- ☐ Improper lifting
- ☐ Improper loading, placing, mixing
- ☐ Improper position/posture for task
- ☐ Operating at improper speed
- ☐ Using defective equipment
- ☐ Using equipment improperly
- ☐ Other action (Specify)

Substandard Conditions

- ☐ Congested or restricted area
- ☐ Defective tools, equipment or materials
- ☐ Excessive noise
- ☐ Heat/cold exposure
- ☐ Inadequate/improper PPE or use of PPE
- ☐ Inadequate communication
- ☐ Inadequate guards or barriers
- ☐ Inadequate information/data
- ☐ Inadequate instruction/procedure
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Inadequate ventilation
- ☐ Inadequate warning system
- ☐ Lack of tools, equipment or materials
- ☐ Poor housekeeping
- ☒ Presence of harmful materials
- ☐ Radiation exposure
- ☐ Uneven ground/terrain
- ☐ Weather or environmental conditions
- ☐ Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Asbestos containing dust in locations not expected or previously identified.

Theory for the source of contamination in the stack has been proposed as the expanded metal and porous (open) mineral wool insulation. The cladding and insulation is original and was not replaced when the asbestos containing exhaust uptake insulation was abated in the 1999 VLE at Victoria Shipyard. Over the 30 years from construction to removal, asbestos fibres released from the exhaust insulation may have embedded in the mineral wool. Through air movement and vessel vibration these fibres have shed coating surfaces inside the stack.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress <input type="checkbox"/> Fatigue <input type="checkbox"/> Lack of knowledge and/or skill <input type="checkbox"/> Physical stress or capability <input type="checkbox"/> Rushing or inattention <input type="checkbox"/> Other (Specify) <div></div>	<input type="checkbox"/> Abuse or misuse of equipment <input type="checkbox"/> Inadequate engineering or design <input checked="" type="checkbox"/> Inadequate hazard assessment <input type="checkbox"/> Inadequate personnel to complete task <input type="checkbox"/> Inadequate tools/equipment/materials <input type="checkbox"/> Inadequate training and/or familiarization <input checked="" type="checkbox"/> Inadequate work standard/procedure <input type="checkbox"/> Lack of enforcement of procedure or supervision <input type="checkbox"/> Standards/procedures not developed <input type="checkbox"/> Wear and tear <input type="checkbox"/> Other (Specify) <div></div>

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

Incomplete identification and abatement of asbestos onboard. Previous abatement did not include removal/encapsulation of porous surfaces in close vicinity. Exposed mineral wool and bronze armored wire in cable trays may have prevented a thorough clean up. Subsequent air flow and vibration may have release previously embedded fibers. Some of the locations asbestos was found are inaccessible to normal cleaning. The deposits may have been from old work or poor workmanship during past remediation.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson CE	25-882-1273	Mike McCullagh CO	250-882-3864
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Steve Buss SE			

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
Property damage inconsequential compared to health risk.	

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Dust wipe samples to be followed up to ensure the deposits do not continue to accumulate.

Air sampling pumps purchased by Marine Engineering for vessel to perform at sea sampling. Training... routine sampling to ensure crew safety.

Asbestos Management Plan and survey to be updated. Precautions and work procedures will need development to ensure safe work procedures are employed when access certain areas.

Asbestos Awareness and Abatement Training to as many crew as possible.

Future abatement projects to include removal of porous surfaces which can not be cleaned.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Marine Engineering/Training		

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
	250-882-1273	
Title	Date (YYYY-MM-DD)	
Chief Engineer		
Email address		
BartlettCE@ccgs-ngcc-gc.ca		

Investigators comments

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L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
	250-213-3685	
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	bartlettSE@ccgs-ngcc.gc.ca	

Workplace OHS Committee Member/Health and Safety Representative comments

--

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
	250-882-3864	
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	bartlettCO@ccgs-ngcc-gc.ca	

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☐ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

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Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and



Fisheries and Oceans Canada
Canadian Coast Guard

the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the Privacy Act and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

1.1 ASBESTOS RELATED WORK LOG

As per sections 1.6, 1.7 and Appendix E, enter the work log in this section.

Date	Location	ACM	ACM Work	Result	Report Ref.
Jan 26, 2018	Wheelhouse Consoles	Dust Test NWE	Testing dust in vicinity to ACM wiring.	Inconclusive as laboratory performed incorrect test.	No report
Jan 29, 2018	Laundry Room	Cracked Bulkhead Lining Panel	Clean up of possible ACM debris and encapsulate exposed cracked edges.	Air test proved good. Dust test behind washing machines showed moderate contamination. Space remained closed.	NWE 34659 IATL 556407
Jan 30, 2018	Wheelhouse Consoles	Dust Test NWE	Resampling of dust in vicinity to ACM wiring.	High contamination found. Consoles remained off limits.	IATL 556407
Feb 1, 2018	ER/MCR	Thermocouple extension wire and gland packing storage	Bulk sampling	30% Chrysotile asbestos in thermocouple extension and at least one sample of packing.	NWE 34694
Feb 2, 2018	Various Locations	Air sampling Dust Test (ER/MCR/HV AC return)	Air Sampling as per NWE Background Sampling proposal	Air sample results below the limit of detection and quantification. Dust Test: Held up at customs. See Feb 8, 2018 resampling	NWE 34694 No dust report.

Feb 3, 2018	Various Location	Air Sampling	Air Sampling	<p>"As before all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits." NWE</p>	NWE 34694
Feb 4-5, 2018	Wheelhouse	ACM Dust in consoles	Canadian Haz-mat performing work with oversight of NWE. Risk Assessment and Safe Work Procedures developed by NEW. 34699 RA V 1.0	<p>Visual inspection passed by NWE. Air clearance passed.</p> <p>Asbestos Air and Visual Clearance Document Received from NWE.</p>	<p>NWE 34699</p> <p>ASB ACD2 V1.0 – CCGS Bartlett – Wheelhouse and Consoles.docx</p>
Feb 5, 2018	Laundry Room	ACM Dust behind washing machines	Canadian Haz-Mat performing work with oversight by NWE. Risk Assessment and Safe Work Procedures developed by NEW. 34699 RA V 1.0	<p>Visual inspection passed by NWE. Air clearance passed.</p> <p>Asbestos Air and Visual Clearance Document Received from NWE.</p>	<p>NWE 34699</p> <p>ASB ACD1 V1.0 – CCGS Bartlett – Laundry Room.docx</p>

Feb 6, 2018	MCR STBD	Old packing stored in cardboard box.	Disposal of packing and cleaning the adjacent area. Risk Assessment and Safe Work Procedures developed by NEW. 34699 RA V 1.0	Visual inspection passed by NWE. Air clearance passed. Asbestos Air and Visual Clearance Document Received from NWE.	NWE 34699 ASB ACD3 V1.0 – CCGS Bartlett – MCR Stores and MCR Console.docx
Feb 6, 2018	MCR/ER	Old ACM thermocouple extension wire and dust in MCR console	Cut bag removal of wire and dust cleanup of MCR console. Risk Assessment and Safe Work Procedures developed by NEW. 34699 RA V 1.0	Visual inspection passed by NWE. Air clearance passed. Asbestos Air and Visual Clearance Document Received from NWE.	NWE 34699 ASB ACD3 V1.0 – CCGS Bartlett – MCR Stores and MCR Console.docx
Feb 7-8, 2018	Wheelhouse Void Space	Dust present in void space with open transits to wheelhouse consoles	Dust clean up. Open porous mineral wool insulation removed as it cannot be cleaned. Risk Assessment and Safe Work Procedures developed by NEW. 34699 RA V 1.0	Visual inspection passed by NWE. Air clearance passed. Asbestos Air and Visual Clearance Document Received from NWE.	NWE 34699 ASB ACD4 V1.0 – CCGS Bartlett – Void Space under Wheelhouse.docx

Feb 8, 2018	Various Locations	Dust Test (ER/MCR/HV AC return)	Follow up dust sampling as part of Background Asbestos Testing Proposal NWE	<p>HVAC and 3 of 4 samples from ER returned low or none detected. MCR console sample returned moderate, this was directly below the ACM wire removals. Area was wet wiped after sample taken. Space passed air clearance. As per NWE recommendation console top HEPA vacuumed. One sample taken from ER in an inaccessible place returned elevated. Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: "Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source. At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer."</p> <p>Follow up sampling to be conducted upon return to Victoria. Defect Entered.</p>	iATL 34694
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Feb 9, 2018	Various Locations	Air Sampling	Air Sampling	Sampling air while underway to recreate normal operating vibration and movement. NWE: "We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits."	NWE 34741 #1A -11A
Feb 9, 2018	Various ACM Bulkhead Lining Panels	Bulkhead Lining Panels	Deck crew performed thorough inspection of accommodations ACM bulkhead lining panels. Caulking minor splits in previously silicone joints.	Repairs performed after consultation with NWE. Followed precautions advised by NWE Half face respirator P100 cartridge, clean shaven with valid fit test, hepa vacuum seam and area below. Apply silicone. No visible debris noted at any of the locations.	No report.
May 15-17, 2018	Various Location	ACM Sampling for pre-refit risk analysis	Bulk sampling of suspected ACM. TEM dusts wipe samples.	Bulk samples returned with no asbestos detected. Dust samples returned with varying levels of contamination.	NWE 202314 iATL 564091
May 28, 2018	Bridge Void	No ACM work. Work performed on void space.	Manhole cover removed for modification for HEPA filtered exhaust fan. Void space sealed with poly and tape.	Work performed by trained ship's crew. Space sealed with poly and marked as asbestos hazard.	No report.

May 31, 2018	Various Locations	Follow-up of pre-refit RA testing	Air Sampling TEM dust wipes samples.	Air sampling in locations where AC dust contamination was detected. MCR and AMS samples were overloaded by welding and paint particulate. Work was stopped and the sample restarted. All air samples are below the threshold. Dust samples returned with contamination in three locations. Stack, 3 rd Officer's Cabin and Hospital. Stack contamination high – access restricted.	NWE 35254 1A-9A EMSL 551806441
June 5,6,7 2018	Cargo Hold - Gym	AC dust	Clean up of AC dust, work performed by Quantum Murray with oversight by NWE.	Air clearance and visual inspection passed by NWE.	Air clearance: NWE 35254-17A and 18A
June 6, 2018	Various Locations	Follow-up from May 31 sampling	Excessive particulate prevent analysis but indication no asbestos fibers detected. Foc'sle, winch room and hold samples retaken.	Varying levels of contamination. Winch room access restricted upon receiving results.	iATL 565543
June 6-12, 2018	AMS	AC dust	Cleanup of AC dust, work performed by Quantum Murray with oversight by NWE.	Visual inspection passed by NWE. Air clearance underway.	

June 6, 2018	Wheelhouse Fire Detection System Console	No ACM work, but work performed in with console doors open.	Removal of doors in preparation to fit Fire Detection system insert panel. Moderate Risk procedures used and work performed by Ship's Crew.	PJSA completed and filed in VSAMP. Bridge to be cleaned by Quantum Murray after crews work.	No report.
June 7, 2018	Wheelhouse Fire Detection System Console	No ACM work. Fire detection system panel cleaning.	Fire detection system panel removed and vacuumed and wet wiped. Fire panel insert installed. Cleaned Fire panel installed in insert and system power up. Moderate Risk procedures used and work performed by Ship's Crew.	PJSA completed and filed VSAMP. Bridge to be cleaned by Quantum Murray after crews work.	No report.
June 7, 2018	3 rd Officers Cabin	Holes found in Marinite Bulkhead Lining Panel	Follow-up inspection from asbestos dust test result found seven holes within 24" of the dust wipe samples location. Moderate Risk procedures used to clean bulkhead and deck below the holes. Holes sealed with silicone caulk.	Work performed by ship's crew. Follow cleaning of cabin performed by Quantum Murray.	

June 7-11, 2018	Cabins	Precautionary cleaning of cabin dust incase contamination was tracked in.	Cabins HEPA vacuumed and wet wiped. Work performed by Quantum Murray with oversight by NWE.	Visual inspection passed by NWE. 3 Cabins chosen as samples for air sample testing. 3 rd Officer's (due to ACM bulkhead damage) Senior Engineer and Aft Oiler's cabin. Air clearance passed. 6 TEM dust wipe samples taken.	Air clearance NWE 35254 samples 29A-34A
June 9, 2018	Bridge Void	No ACM work. Work performed on void space.	Manhole cover reinstalled with new gasket.	Work performed by trained crew members.	No report.
June 10, 2018	Stbd Upper Deck Watertight Door	AC dust	Accessible dust cleaned by Quantum Murray with oversight by NWE.		
June 10, 2018	Gym	No ACM work. Work performed on BT Cabinet.	Blanking plate installed in place of unused cabinet filter (outboard).	PJSA completed and filed VSAMP. Work performed by trained crew members after direction from NWE on work procedure.	No report.

June 11, 2018	Cabins	ACM bulkheads	Cabin inspection performed to find and seal screw holes to AC bulkhead lining panels. Aluminum foil tape applied to openings in old fluorescent light fixtures openings to deck head cavity.	Open screw holes sealed with silicone caulk. Work performed by trained crew members.	No report.
June 6-12, 2018	MCR	AC Dust	Prep work by Quantum Murray with oversight by NWE. Cleanup work not started.		
June 6-12, 2018	ER including Stack	AC Dust	Prep work by Quantum Murray and Industrial Scaffolding with oversight by NWE. Cleanup work not started.		
June 11-12, 2018	Lounge	Precautionary cleaning of dust incase contamination was tracked in.	Lounge HEPA vacuumed and wet wiped. Work performed by Quantum Murray with oversight by NWE.	Visual inspection completed by NWE. Air clearance underway	
June 12, 2018	Wheelhouse	AC Dust	Prep work by Quantum Murray with oversight by NWE. Cleanup work not started.		

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June 14, 2018 6:20 AM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Subject: FW: Bartlett Results - May 29th 2018
Attachments: image001.png; 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1 V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May-29-18 4:45 PM
To: 'Rosco Mac'
Subject: FW: Bartlett Results

Hi Ross,

Sorry to bother you on your off-cycle but I want to include you in the asbestos sampling results and remediation plans. It looks like we have asbestos dust in various locations from the sampling that was performed at crew change. At present, I don't know what to say... some are in locations which make tracking the source of the dust difficult (the only thought I have is previous abatement of pipe insulation or wear and tear prior to abatement). It might be from previous remediation or work performed in the distant past when precautions were not followed/taken as seriously as they are today. NWE, Marine Engineering, CME, and Quantum Murray (CME abatement company) are going to attend the ship tomorrow and maybe Thursday to develop a plan. Given the scale of the results and locations found I doubt the time period scheduled for this refit will be sufficient to complete the work required.

The RD Fleet, Roc, Fleet Safety and Security, Superintendent of Marine Engineering(including Deputy) have already been briefed and are part of the plans going forward.
I will keep you in the loop.

Regards

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]
Sent: May-29-18 10:17 AM

To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Fw: Bartlett Results

Matt,

I'll look over these and we can talk in the afternoon. We can meet with NWE onboard tomorrow if you think we should.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: [REDACTED]
Sent: Tuesday, May 29, 2018 10:01
To: Chaikin, Gabriel
Cc: [REDACTED]
Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge – fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) – logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
2. Moderate range (> 10,000 – 50,000 s/cm2):
 - a. Bridge – mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck – stb aft alleyway deckhead cavity
 - e. N bridge deck – bridge deckhead cavity
3. Elevated range (> 50,000 – 100,000 s/cm2):
 - a. Bridge – fwd/port console
 - b. Bridge – Fwd middle console
 - c. MCR – port side top of ducting
 - d. Upper deck – aft oilers cabin deckhead cavity
 - e. Gym – top of electrical cabinet
4. High range (> 100,000 s/cm2):
 - a. Bridge – fire panel console (mid port console)
 - b. AMS wireway above sewage tank
 - c. MER wireway adj. escape hatch
 - d. Upper deck – stbd aft watertight door deckhead cavity

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting lead-containing paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



[Redacted]
Project Manager
North West Environmental Group Ltd.
C. [Redacted]

From: [Redacted]

Sent: May 29, 2018 8:43 AM

To: 'Chaikin, Gabriel' <Gabriel.Chaikin@dfo-mpo.gc.ca>; [Redacted]

Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent – pending any emergencies we should be able to send it out around noon. I'll keep you updated.

Thanks for your patience,



[Redacted]
Project Manager
North West Environmental Group Ltd.
C. [Redacted]

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>

Sent: May 29, 2018 8:15 AM

To: [Redacted]

Subject: Bartlett Results

Good day [Redacted] and [Redacted]

We are hoping to have the results of our dust wipes in order to proceed with our projects on board.

Thank you

Gabe.

Sent from my BlackBerry 10 smartphone on the Bell network.

**Pages 1195 to / à 1216
are duplicates of
sont des duplicatas des
pages 1072 to / à 1093**



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Paint

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL=0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- * Insufficient sample provided to perform QC reanalysis (<200 mg)
- ** Not enough sample provided to analyze (<50 mg)
- *** Matrix / substrate interference possible.

Labelle-Rice, Roxane

From: Richardson, John
Sent: June-15-18 3:18 PM
To: Harvey, Clifford
Subject: FW: Bartlett Results
Attachments: 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1 V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

FYI

From: DeAngelis, Vincenzo
Sent: 2018-May-30 6:55 AM
To: Richardson, John
Cc: Harvey, Clifford
Subject: FW: Bartlett Results

John,

Please see attached. Let's discuss when you are back in the office next week.

Best Regards,

Vince

Vince De Angelis
Marine Engineering | Ingénierie Navale
Integrated Technical Services | Services Techniques Intégrés
Canadian Coast Guard | Garde Côtière Canadienne
200 Kent Street, Office | Bureau 7W077
Ottawa, ON, K1A 0E6
vincenzo.deangelis@dfo-mpo.gc.ca
Telephone | Téléphone 613-219-2733

From: Ivany, Gary
Sent: Tuesday, May 29, 2018 3:54 PM
To: Harvey, Clifford <Clifford.Harvey@dfo-mpo.gc.ca>; DeAngelis, Vincenzo <Vincenzo.DeAngelis@dfo-mpo.gc.ca>
Cc: Ryan, Sam <Sam.Ryan@dfo-mpo.gc.ca>
Subject: Fw: Bartlett Results

Fyi

Gary

Sent from my BlackBerry 10 smartphone on the Bell network.

From: McNish, Joanne <Joanne.McNish@dfo-mpo.gc.ca>
Sent: Tuesday, May 29, 2018 3:51 PM
To: Ivany, Gary; Lick, Gregory
Cc: Hunt, Cliff; Ormiston, Glenn
Subject: Fw: Bartlett Results

Gary/Greg,
Fyi.

Glenn will have the details from what unfolds today, but wanted to advise prior to our F2F. My concern is the crew will lose confidence that we are adequately mitigating risk of asbestos, despite the progressive steps we've taken to date..

We should discuss if it is worthwhile to get a second assessment?

Joanne

Sent by BB

From: CCGS-NGCC, Bartlett Captain <BartlettCO@ccgs-ngcc.gc.ca>
Sent: Tuesday, May 29, 2018 1:57 PM
To: McNish, Joanne
Cc: Western ROC Superintendent Surintendant ROC Ouest (DFO/MPO); CCGS-NGCC, Bartlett Chief Engineer
Subject: FW: Bartlett Results

Joanne;

Attached is an asbestos results report from wipe samples taken by North West Environmental at the onset of this refit.

Of concern are the elevated and high results in some areas.

We do not have the knowledge or skills to address these levels, so have asked Marine Engineering to invite North West to come down to the ship and advise on mitigation measures.

Is there an Asbestos Advisory Group in Ottawa whose experts can advise on a strategy moving forward?

Chief Engineer Jackson and myself can come up to discuss if you have some time.

Mike

Captain Mike McCullagh
Commanding Officer, CCGS Bartlett
Email: BartlettCO@bar.ccs-ngcc.gc.ca

Cell: [REDACTED]
Toll-free: 250.213.3685
Victoria CG Base Landline: 250.480.2692
Iridium Voice: [REDACTED]
Iridium Data: [REDACTED]

Mailing Address:
25 Huron Street
Victoria BC V8V 4V9



Government of Canada
Gouvernement du Canada

Canada

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: May-29-18 10:24 AM

s.19(1)

To: CCGS-NGCC, Bartlett Captain
Subject: FW: Bartlett Results

Asbestos and lead paint test results from pre-refit sampling arranged by WC.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: 250.882.1273
BartlettCE@ccgs-ngcc.gc.ca

From: Chaikin, Gabriel [<mailto:Gabriel.Chaikin@dfo-mpo.gc.ca>]
Sent: May-29-18 10:17 AM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Fw: Bartlett Results

Matt,

I'll look over these and we can talk in the afternoon. We can meet with NWE onboard tomorrow if you think we should.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: J [REDACTED]
Sent: Tuesday, May 29, 2018 10:01
To: Chaikin, Gabriel
Cc: [REDACTED]
Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

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- e. N bridge deck – bridge deckhead cavity
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 - c. MCR – port side top of ducting
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 - c. MER wireway adj. escape hatch
 - d. Upper deck – stbd aft watertight door deckhead cavity

s.16(2)

s.19(1)

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting lead-containing paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



Project Manager
North West Environmental Group Ltd.
C. [REDACTED] (Primary)

From: [REDACTED]
Sent: May 29, 2018 8:43 AM
To: 'Chaikin, Gabriel' <Gabriel.Chaikin@dfo-mpo.gc.ca>; [REDACTED]
Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent – pending any emergencies we should be able to send it out around noon. I'll keep you updated.
Thanks for your patience,



Project Manager
North West Environmental Group Ltd.
[REDACTED] (Primary)

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>
Sent: May 29, 2018 8:15 AM
To: [REDACTED]
Subject: Bartlett Results

Good day [REDACTED]

We are hoping to have the results of our dust wipes in order to proceed with our projects on board.

Thank you

Gabe.

Sent from my BlackBerry 10 smartphone on the Bell network.



**North West
Environmental Group Ltd.**

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Date: May 17, 2018

Contractor: Canadian Coast Guard - Victoria

Client Job or PO#: NEED

Project: CCGS Bartlett - General Hazmat Consulting

Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-1b	Port Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	
35254-2b	Starboard Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-4b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Red Gasket	Red	100	None Detected	0	Non-Fibrous	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	



AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-7b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Teal Gasket	Teal	100	None Detected	0	Non-Fibrous (70%) Cellulose (15%) Synthetic (15%)	100	
35254-8b Layer 1	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-8b Layer 2	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-9b	Main Engine Room (Fire Station 16)	May-17-2018	JD	Black Gasket	Black	100	None Detected	0	Cellulose (15%) Non-Fibrous (85%)	100	



LAB# 202314



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514632 Client No.:35254-13b	Location: Bridge-Fire Panel Console (Mid Port Console) Area (cm ²): 100 Density (s/mm ²): 1850	Concentration (s/cm ²): 178000 Asbestos Type(s): Chrysotile Amosite
Lab No.:6514633 Client No.:35254-14b	Location: A.M.S. (Wireway Above Sewage Tank) Area (cm ²): 50 Density (s/mm ²): 231	Concentration (s/cm ²): 222000 Asbestos Type(s): Chrysotile
Lab No.:6514634 Client No.:35254-15b	Location: M.E.R. (Wireway Adjacent To Escape Hatch) Area (cm ²): 100 Density (s/mm ²): 57.7	Concentration (s/cm ²): 111000 Asbestos Type(s): Chrysotile Tremolite Amosite
Lab No.:6514635 Client No.:35254-16b	Location: Bridge-(Forward Port Console) Area (cm ²): 100 Density (s/mm ²): 135	Concentration (s/cm ²): 64800 Asbestos Type(s): Amosite Chrysotile
Lab No.:6514636 Client No.:35254-17b	Location: Bridge-(Forward Middle Console) Area (cm ²): 100 Density (s/mm ²): 231	Concentration (s/cm ²): 55500 Asbestos Type(s): Amosite Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:



Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

Page 1 of 6

001225



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514637 Client No.:35254-18b	Location: Bridge-(Forward Starboard Console) Area (cm ²): 100 Density (s/mm ²): <9.62	Concentration (s/cm ²): <9250 Asbestos Type(s): None Detected
Lab No.:6514638 Client No.:35254-19b	Location: Bridge-(Mid Starboard Console) Area (cm ²): 100 Density (s/mm ²): 115	Concentration (s/cm ²): 27800 Asbestos Type(s): Amosite Chrysotile
Lab No.:6514639 Client No.:35254-20b	Location: MCR-Console Area (cm ²): 100 Density (s/mm ²): 106	Concentration (s/cm ²): 17000 Asbestos Type(s): Chrysotile Amosite
Lab No.:6514640 Client No.:35254-21b	Location: MCR-Top Of Console Area (cm ²): 100 Density (s/mm ²): 67.3	Concentration (s/cm ²): 16200 Asbestos Type(s): Chrysotile
Lab No.:6514641 Client No.:35254-22b	Location: MCR-Port Side-Top Of Ducting Area (cm ²): 100 Density (s/mm ²): 28.8	Concentration (s/cm ²): 55500 Asbestos Type(s): Chrysotile Amosite
Lab No.:6514642 Client No.:35254-23b	Location: MCR-Port Side-Wireway Adjacent Switch Console Area (cm ²): 100 Density (s/mm ²): 67.3	Concentration (s/cm ²): 6480 Asbestos Type(s): Chrysotile
Lab No.:6514643 Client No.:35254-24b	Location: Upper D: Starboard Aft Alleyway- Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): 57.7	Concentration (s/cm ²): 27800 Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:29

Page 2 of 6

001226



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514644 Client No.:35254-25b	Location: Upper D: Stbd Aft Watertight Door-DH Cavity Area (cm ²): 100 Density (s/mm ²): 212	Concentration (s/cm ²): 204000 Asbestos Type(s): Chrysotile Amosite
Lab No.:6514645 Client No.:35254-26b	Location: Upper D: Aft Oilers Cabin-Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): 19.2	Concentration (s/cm ²): 37000 Asbestos Type(s): Chrysotile
Lab No.:6514646 Client No.:35254-27b	Location: Poop D: (P-2) Logistics Office-Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): <9.62	Concentration (s/cm ²): <4630 Asbestos Type(s): None Detected
Lab No.:6514647 Client No.:35254-28b	Location: N. Bridge D: (N-5) Cadet Cabin-Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): <9.62	Concentration (s/cm ²): <9250 Asbestos Type(s): None Detected
Lab No.:6514648 Client No.:35254-29b	Location: N. Bridge D: Bridge-Deckhead Cavity Area (cm ²): 100 Density (s/mm ²): 67.3	Concentration (s/cm ²): 16200 Asbestos Type(s): Chrysotile Actinolite
Lab No.:6514649 Client No.:35254-30b	Location: M.E.R.-Aft Port (Metal Plate Beneath Wireway) Area (cm ²): 50 Density (s/mm ²): <9.62	Concentration (s/cm ²): <4630 Asbestos Type(s): None Detected
Lab No.:6514650 Client No.:35254-31b	Location: Gym-Top Of Electrical Cabinet Area (cm ²): 100 Density (s/mm ²): 86.5	Concentration (s/cm ²): 83300 Asbestos Type(s): Chrysotile Amosite

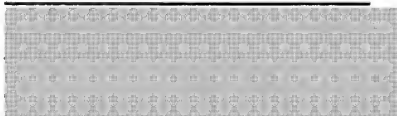
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:



Approved By:

Frank E. Ehrenfeld, III

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

Page 3 of 6

001227



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6514651
Client No.: 35254-31

Location: Additional Sample Received
Area (cm²): 100
Density (s/mm²): 9.62

Concentration (s/cm²): 925
Asbestos Type(s): Actinolite

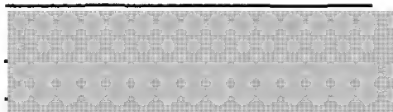
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:



Approved By:

A handwritten signature in black ink.

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:29

Page 4 of 6

001228



s.19(1)

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

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Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 5/28/2018 4:18:29

Page 5 of 6

001229



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514632
Client No.: 35254-13b
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 2
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0260
Sensitivity (s/mm²): 38.5
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Bridge-Fire Panel Console (Mid Port Console)
Asbestos Structures: 48
Structures < 5 Microns: 44
Structures ≥ 5 µm: 4
Structure Density (s/mm²): 1850
Structure Concentration (s/cm²): 178000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <38.5
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID: 1:14:07PM

Lab No.: 6514633
Client No.: 35254-14b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 50
Location: A.M.S. (Wireway Above Sewage Tank)
Asbestos Structures: 24
Structures < 5 Microns: 22
Structures ≥ 5 µm: 2
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 222000
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31



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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514634
Client No.: 35254-15b
Volume Filtered (mL): 0.25
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 18500

Micrograph Number:
EDXA Spectrum ID: 2:17:13PM

Lab No.: 6514635
Client No.: 35254-16b

Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²): 100
Location: M.E.R. (Wireway Adjacent To Escape Hatch)
Asbestos Structures: 6
Structures < 5 Microns: 3
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 57.7
Structure Concentration (s/cm²): 111000
Asbestos Type(s):
Chrysotile
Tremolite
Amosite

Area Sampled (cm²): 100
Location: Bridge-(Forward Port Console)
Asbestos Structures: 14
Structures < 5 Microns: 12
Structures ≥ 5 µm: 2
Structure Density (s/mm²): 135
Structure Concentration (s/cm²): 64800
Asbestos Type(s):
Amosite
Chrysotile

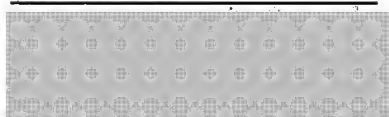
Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <18500
Non-Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 22
Structure Density (s/mm²): 212
Structure Concentration (s/cm²): 102000
Non-Asbestos Type(s):
SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Signature:
Analyst:



Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514636
Client No.: 35254-17b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Bridge-(Forward Middle Console)
Asbestos Structures: 24
Structures < 5 Microns: 21
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 24
Structure Density (s/mm²): 231
Structure Concentration (s/cm²): 55500
Non-Asbestos Type(s):
SiAl - Other Fiber
SiMg - Talc

Micrograph Number:
EDXA Spectrum ID:

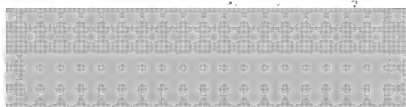
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:



Approved By:

A handwritten signature in black ink, appearing to read "Frank Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

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001233



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514637
Client No.: 35254-18b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Bridge-(Forward Starboard Console)
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514638
Client No.: 35254-19b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: Bridge-(Mid Starboard Console)
Asbestos Structures: 12
Structures < 5 Microns: 11
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 27800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

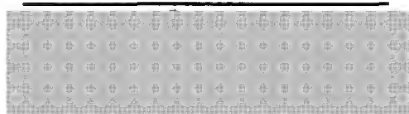
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514639
Client No.: 35254-20b

Volume Filtered (mL): 3
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 1540

Area Sampled (cm²): 100
Location: MCR-Console

Asbestos Structures: 11

Structures < 5 Microns: 10
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 106
Structure Concentration (s/cm²): 17000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <1540
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514640
Client No.: 35254-21b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: MCR-Top Of Console

Asbestos Structures: 7

Structures < 5 Microns: 6
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 16200
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:31

Page 5 of 12

001235



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514641
Client No.: 35254-22b
Volume Filtered (mL): 0.25
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 18500

Area Sampled (cm²): 100
Location: MCR-Port Side-Top Of Ducting
Asbestos Structures: 3
Structures < 5 Microns: 3
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 28.8
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <18500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514642
Client No.: 35254-23b
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: MCR-Port Side-Wireway Adjacent Switch Console
Asbestos Structures: 7
Structures < 5 Microns: 4
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 6480
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

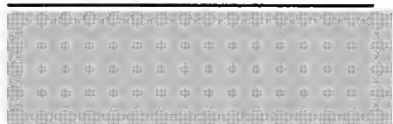
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31



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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514643
Client No.: 35254-24b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 100
Location: Upper D: Starboard Aft Alleyway-
Deckhead Cavity
Asbestos Structures: 6
Structures < 5 Microns: 5
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 57.7
Structure Concentration (s/cm²): 27800
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514644
Client No.: 35254-25b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Upper D: Stbd Aft Watertight Door-
DH Cavity
Asbestos Structures: 22
Structures < 5 Microns: 16
Structures ≥ 5 µm: 6
Structure Density (s/mm²): 212
Structure Concentration (s/cm²): 204000
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

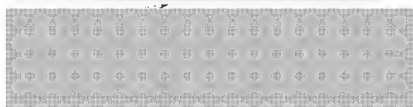
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31



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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514645
Client No.: 35254-26b
Volume Filtered (mL): 0.25
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 18500

Area Sampled (cm²): 100
Location: Upper D: Aft Oilers Cabin-Deckhead
Cavity
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 37000
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <18500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514646
Client No.: 35254-27b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 100
Location: Poop D: (P-2) Logistics Office-
Deckhead Cavity
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/23/2018

Signature:

Analyst:

Dated : 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director



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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514647
Client No.: 35254-28b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: N. Bridge D: (N-5) Cadet Cabin-Deckhead Cavity
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514648
Client No.: 35254-29b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 2310

Area Sampled (cm²): 100
Location: N. Bridge D: Bridge-Deckhead Cavity
Asbestos Structures: 7
Structures < 5 Microns: 6
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 67.3
Structure Concentration (s/cm²): 16200
Asbestos Type(s):
Chrysotile
Actinolite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <2310
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

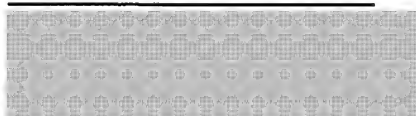
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514649
Client No.: 35254-30b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 4630

Area Sampled (cm²): 50
Location: M.E.R.-Aft Port (Metal Plate Beneath
Wireway)
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <4630
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6514650
Client No.: 35254-31b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Gym-Top Of Electrical Cabinet
Asbestos Structures: 9
Structures < 5 Microns: 9
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 86.5
Structure Concentration (s/cm²): 83300
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

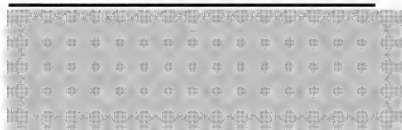
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514651
Client No.: 35254-31

Area Sampled (cm²): 100
Location: Additional Sample Received

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 9.62
Structure Concentration (s/cm²): 925
Asbestos Type(s):
Actinolite

Structure Density (s/mm²): <9.62
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

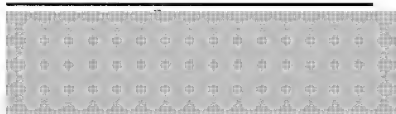
Date Received: 5/18/2018
Date Analyzed: 05/23/2018

Approved By:

A handwritten signature in black ink, appearing to read "Frank Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 5/28/2018 4:18:31



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018
Report No.: 564091 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Client: NOR765

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6514792 Client No.: 35254-10b	Description: Red Paint On Metal Location: Auxiliary Machine Space Watertight Door	Result (% by Weight): <0.0062 Result (ppm): <62 Comments:
Lab No.: 6514793 Client No.: 35254-11b	Description: White Paint On Metal Location: Main Engine Rm Aft Bulkhead	Result (% by Weight): 0.96 Result (ppm): 9600 Comments:
Lab No.: 6514794 Client No.: 35254-12b	Description: Black Paint On Metal Location: Port Windlass	Result (% by Weight): <0.0067 Result (ppm): <67 Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 5/18/2018

Date Analyzed: 05/21/2018

Signature:

Analyst:



Approved By:

A handwritten signature in black ink, appearing to read "Frank Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 5/28/2018 4:18:37

Page 1 of 2

001243

s.19(1)



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 5/21/2018
Report No.: 564104 - Lead Paint
Project: CCGS Bartlett - General Hazmat Consulting
Project No.: 35254

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: [REDACTED]
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Paint
Exceptions Noted: See Following Pages

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Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.
Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B.
Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.
LSD=0.2 ppm MDL=0.005% by weight. RL=0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- * Insufficient sample provided to perform QC reanalysis (<200 mg)
- ** Not enough sample provided to analyze (<50 mg)
- *** Matrix / substrate interference possible.

Richardson, John

From: Richardson, John
Sent: 2018-June-15 5:36 PM
To: Chaikin, Gabriel; Hunt, Cliff; Harvey, Clifford; DeAngelis, Vincenzo
Cc: Wright, Edward; Granger, Louise Anne
Subject: Re: Bartlett Results

Gabe,

That's great, thanks for this on short notice.

Cliff,

See Gabe's edits below

John Richardson
613-617-9060

From: Chaikin, Gabriel
Sent: Friday, June 15, 2018 5:09 PM
To: Richardson, John; Hunt, Cliff
Cc: Wright, Edward; Granger, Louise Anne
Subject: Bartlett Results

Concerning the Asbestos on the CCGS Bartlett:

In February of this year testing was conducted on the Bartlett which brought to light previously unidentified asbestos containing materials. Due to these discoveries further exploratory testing was conducted though-out the vessel. The majority of the findings were in areas that are not regularly accessed and do not receive regular cleaning; meaning that the contamination occurred prior to previous remediation activities. Some findings though were in high traffic areas; indicating that encapsulation may have been failing or that there were unknown sources. Each finding has had to be analysed individually. A major source of contamination was discovered in the exhaust stack. This area was fully remediated in 1999 to remove all asbestos containing material but at that time the bulkhead insulation in this area was not replaced. The insulation is not asbestos. It was contaminated with asbestos prior to the remediation and has since served as a source of contamination as it has shed the fibers down into the machinery space. These asbestos contaminated materials will be fully encapsulated prior to the refit work proceeding.

Tests conducted on the vessel include bulk samples of materials, air samples taken over 10 hour periods while the vessel is stationary and while underway, and dust wipe samples. All air samples have been in the non-detectable range, however dust wipe samples have indicated asbestos above acceptable levels. Of key note the wipe samples taken in the vessels air ducting have found no contamination.

The ongoing concerns of asbestos on the Bartlett were recently raised at the Marine Engineering – National Management Committee and it was indicated that the asbestos issues were being handled in the region utilizing local contractors with the appropriate environmental credentials. A full clean of the vessel is underway with the accommodation now complete and the engine spaces in progress. Asbestos training has been conducted for the crew. An ongoing regime of air sampling and dust wipes will be implemented for this vessel. Controls have been put in place to limit access to all areas which cannot be guaranteed asbestos free.

Gabriel Chaikin
Marine Engineering | Ingénierie navale
(250) 363-0228

From: Richardson, John
Sent: 2018-June-15 12:42 PM
To: Wright, Edward; Chaikin, Gabriel
Cc: Granger, Louise Anne
Subject: RE: Bartlett Results
Importance: High

Gabe/Ed,

Commissioner has asked Cliff to provide a few lines on the Bartlett and the Asbestos issue. Could you please review this and make sure it is correct and add any pertinent info?

Concerning the Asbestos on the CCGS Bartlett:

During the last six months or so there has been some discovery of previously unidentified asbestos containing materials on the Bartlett. Due to these discoveries there has been more exploratory testing conducted using 3rd party laboratories. These tests have included both air sampling and wipe tests. All air samples have been in the acceptable range, however dust (wipe) samples have had indications of asbestos. It is believed that there has also been more asbestos located in the exhaust stack. The ongoing concerns of asbestos on the Bartlett were recently raised at the Marine Engineering – National Management Committee and it was indicated that the asbestos issues were being handled in the region utilizing local contractors with the appropriate environmental credentials.

Thanks,
John

Bartlett Asbestos Results

Saturday, June 16, 2018 3:17 PM

Subject: **FW: Bartlett Results**
From: Hunt, Cliff
To: Ryan, Sam
Sent: Friday, June 15, 2018 6:30 PM

A summary of what we discussed earlier...

Cliff

From: Chaikin, Gabriel
Sent: Friday, June 15, 2018 2:09 PM
To: Richardson, John <John.Richardson@dfo-mpo.gc.ca>; Hunt, Cliff <Cliff.Hunt@dfo-mpo.gc.ca>
Cc: Wright, Edward <Edward.Wright@DFO-MPD.GC.CA>; Granger, Louise Anne <LouiseAnne.Granger@dfo-mpo.gc.ca>
Subject: Bartlett Results

Concerning the Asbestos on the CCGS Bartlett:

In February of this year testing was conducted on the Bartlett which brought to light previously unidentified asbestos containing materials. Due to these discoveries further exploratory testing was conducted throughout the vessel. The majority of the findings were in areas that are not regularly accessed and do not receive regular cleaning; meaning that the contamination occurred prior to previous remediation activities. Some findings though were in high traffic areas; indicating that encapsulation may have been failing or that there were unknown sources. Each finding has had to be analysed individually. A major source of contamination was discovered in the exhaust stack. This area was fully remediated in 1999 to remove all asbestos containing material but at that time the bulkhead insulation in this area was not replaced. The insulation is not asbestos. It was contaminated with asbestos prior to the remediation and has since served as a source of contamination as it has shed the fibers down into the machinery space. These asbestos contaminated materials will be fully encapsulated prior to the refit work proceeding.

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Gabriel Chaikin
Marine Engineering | Ingénierie navale
(250) 363-0228

From: Richardson, John
Sent: 2018-June-15 12:42 PM
To: Wright, Edward; Chaikin, Gabriel
Cc: Granger, Louise Anne
Subject: RE: Bartlett Results
Importance: High

Gabe/Ed,

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Concerning the Asbestos on the CCGS Bartlett:

During the last six months or so there has been some discovery of previously unidentified asbestos containing materials on the Bartlett. Due to these discoveries there has been more exploratory testing conducted using 3rd party laboratories. These tests have included both air sampling and wipe tests. All air samples have been in the acceptable range, however dust (wipe) samples have had indications of asbestos. It is believed that there has also been more asbestos located in the exhaust stack. The ongoing concerns of asbestos on the Bartlett were recently raised at the Marine Engineering – National Management Committee and it was indicated that the asbestos issues were being handled in the region utilizing local contractors with the appropriate environmental credentials.

Thanks,
John

Subject: **Bartlett**
From: Harvey, Clifford
To: Ryan, Sam
Sent: Friday, June 15, 2018 5:37 PM

Concerning the Asbestos on the CCGS Bartlett:

In February of this year testing was conducted on the Bartlett which brought to light previously unidentified asbestos containing materials. Due to these discoveries further exploratory testing was conducted throughout the vessel. The majority of the findings were in areas that are not regularly accessed and do not receive regular cleaning; meaning that the contamination occurred prior to previous remediation activities. Some findings though were in high traffic areas; indicating that encapsulation may have been failing or that there were unknown sources. Each finding has had to be analysed individually. A major source of contamination was discovered in the exhaust stack. This area was fully remediated in 1999 to remove all asbestos containing material but at that time the bulkhead insulation in this area was not replaced. The insulation is not asbestos. It was contaminated with asbestos prior to the remediation and has since served as a source of contamination as it has shed the fibers down into the machinery space. These asbestos contaminated materials will be fully encapsulated prior to the refit work proceeding.

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The ongoing concerns of asbestos on the Bartlett were recently raised at the Marine Engineering – National Management Committee and it was indicated that the asbestos issues were being handled in the region utilizing local contractors with the appropriate environmental credentials. A full clean of the vessel is underway with the accommodation now complete and the engine spaces in progress. Asbestos training has been conducted for the crew. An ongoing regime of air sampling and dust wipes will be implemented for this vessel. Controls have been put in place to limit access to all areas which cannot be guaranteed asbestos free.

Clifford Harvey
(613) 2201810

No information has been removed or severed from this page

Ayres, Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>
Sent: Monday, June 18, 2018 12:24 PM
To: Ayres, Bob
Subject: RE: Bartlett Asbestos - crew meeting?
Attachments: Alexander 22 july 2017 2 gasket samples.pdf; CCGS Alexander 2015.pdf; CCGS Alexander 2017.pdf

Hi – I've received these files from one of our hygienists in Ottawa who dealt with the CCGS Ship Alexander in 2015 and 2017

on this issue – have a
read and then we should talk, hopefully later today.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)
Santé Canada / Gouvernement du Canada
don.krawciw@hc-sc.gc.ca / Tél. : 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [<mailto:Bob.Ayres@dfo-mpo.gc.ca>]
Sent: 2018-06-15 7:39 AM
To: Krawciw, Don (HC/SC)
Subject: RE: Bartlett Asbestos - crew meeting?

Thanks Don. We'll be good to go.
Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>
Sent: Thursday, June 14, 2018 5:01 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: RE: Bartlett Asbestos - crew meeting?

I'm thinking later in the week. Will be in touch again in Monday.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)
Santé Canada / Gouvernement du Canada
don.krawciw@hc-sc.gc.ca / Tél. : 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [<mailto:Bob.Ayres@dfo-mpo.gc.ca>]
Sent: 2018-06-14 11:31 AM
To: Krawciw, Don (HC/SC)
Subject: Bartlett Asbestos - crew meeting?

Hello Don,

As we thought might happen the new crew that is now aboard the Bartlett is asking if they can have the same opportunity to talk about asbestos with yourself and the NW folks.

Would there be a time early next week that would work for you? Monday morning is not great here but that afternoon or anytime Tuesday would work (as would later in week).

Please let me know if this is possible,
Bob

From: Ayres, Bob
Sent: Wednesday, June 13, 2018 4:26 PM
To: 'Krawciw, Don (HC/SC)' <don.krawciw@canada.ca>
Subject: RE: Bartlett Asbestos

Hi again Don,

We have decided to do up a regional bulletin for awareness of employees, regarding asbestos and lead paint.

In that bulletin we would like to include a little bit of background to the issues – perhaps something along the lines of what was discussed on Friday touching on uses and presence of these products in the workplace, the changes in thresholds over the years and to attempt to place risk and potential exposure in context, etc.

We hope to have this bulletin ready for distribution by the later part of next week at the latest.

The attached IIRs and lead paint result were received by our office on Tuesday of this week and may provide additional context.

Regards,
Bob

From: Ayres, Bob
Sent: Monday, June 11, 2018 3:20 PM
To: 'Krawciw, Don (HC/SC)' <don.krawciw@canada.ca>
Subject: RE: Bartlett Asbestos

Thanks Don – will do.
Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>
Sent: Monday, June 11, 2018 2:47 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: RE: Bartlett Asbestos

Thanks Bob – I've forwarded this along – please check back with me in 2 weeks if you haven't heard from me or someone at Health Canada before then.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)
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don.krawciw@hc-sc.gc.ca / Tél. : 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [<mailto:Bob.Ayres@dfo-mpo.gc.ca>]
Sent: 2018-06-11 12:47 PM
To: Krawciw, Don (HC/SC)
Subject: Bartlett Asbestos

Hello Don,
Apologies for delay in getting this to you today – morning got busy.

Attached are the reports from testing on Bartlett.

1. AB1 is the bulk sample from May 17th
2. ABWIPE1 is wipe test from various locations on board – report date May 23rd
3. Pb1 is the lead sample from paint on metal – report date May 21st
4. 551806441 is the more recent dust sampling (collected May 31st) which includes the results from the stack (funnel) on Bartlett

As discussed we'd be very interested in the assistance of your industrial hygienist in providing a review of these sampling results.

Any expert of informed opinion would be welcome with regard interpretation of the numbers in the various reports and the likely meaning of these to our employees who have potentially been exposed.

Cleaning and remediation efforts are currently underway. We are considering how best to communicate further to employees past and present regarding potential exposure and documenting of this potential in case (hopefully not) of need for future claim etc.

Thanks again for coming down and speaking with our people on Friday. It was very helpful.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security

Canadian Coast Guard - Western Region

25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636

Cell: [REDACTED]

E-mail: bob.ayres@dfo-mpo.gc.ca



GROUPE

Environex

Emblème de qualité de vie

4495, boul. Wilfrid-Hamel, suite 150, Québec (Québec) G1P 2J7

418 977.1220 1 877 977 1220 labt@environex.com

Rapport final**Bio-visite numéro : 2017-284034**

Client : Verreault Navigation inc.

Contact :

Téléphone : (418) 729-3733

Adresse : 127, Rue du Quai
Les Méchins
Québec, Canada
G0J 1T0

Télécopieur : -

Date de prélèvement :
22 juillet 2017Date de réception :
27 juillet 2017Date de résultat :
27 juillet 2017Date d'approbation :
27 juillet 2017

Entrepreneur :

d'installation :

No. Projet ou No. Bon Commande : Garde Côtière Canadienne

Prélevé par : N/D

01 : Identification de l'échantillon : 1

Lieu du prélèvement : Navire NGCC Sir William Alexander

État à la réception : Conforme

Notre référence au MDDELCC :

Matrice / Nature de l'échantillon : Matériaux

Origine de l'échantillon :

Point d'échantillonnage :

Analyse de l'Amiante et des Matériaux**Analyse****Méthode****Ini.**

Amiante dans les matériaux (MLP) <24h

Microscopie à polarisation et dispersion des couleurs -
Méthode IRSST 244

SCO

- Couche #1

Composition: Joint d'étanchéité gris foncé

FIBRES D'AMIANTE: Non détectées

Matériel non-fibreux: 75 à 90%

Fibres naturelles: 10 à 25%

- Couche #2

Composition: Métal gris

FIBRES D'AMIANTE: Non détectées

Matériel non-fibreux: >90%

Fibres naturelles: <1%

02 : Identification de l'échantillon : 2

Lieu du prélèvement : Navire NGCC Sir William Alexander

État à la réception : Conforme

Notre référence au MDDELCC :

Matrice / Nature de l'échantillon : Matériaux

Origine de l'échantillon :

Point d'échantillonnage :

Analyse de l'Amiante et des Matériaux**Analyse****Méthode****Ini.**

Amiante dans les matériaux (MLP) <24h

Microscopie à polarisation et dispersion des couleurs -
Méthode IRSST 244

SCO

- Couche #1

Composition: Joint d'étanchéité gris pâle

FIBRES D'AMIANTE: Détectées (+)

Type d'amiante: Chrysotile de 75% à 90%

Matériel non-fibreux: 5 à 10%

Fibres naturelles: 1 à 5%

- Couche #2

Composition: Métal gris

FIBRES D'AMIANTE: Non détectées

Matériel non-fibreux: >90%

Fibres naturelles: <1%

N.B. : Une mention «Fibres d'amiante : Détectées» confirme que la concentration est évaluée à être supérieure à 0,1 %. Cette méthode analytique est semi-quantitative. Le domaine d'applicabilité de la méthode varie de < 1 % à 100 % (v/v).

Légende pour l'analyse de l'amiante dans les matériaux

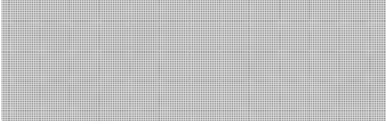
Résultats confirmant la norme permise :

Négatif (non-détectées) / Trace (<0,1%)

Gammes confirmant la présence d'amiante dans l'échantillon :

Détectées (+); <1% / 1-5% / 5-10% / 10-25% / 25-50% / 50-75% / 75-90% / >90%

Approuvé par :



Les analyses sont effectuées dans les Laboratoires Environex de Québec. Ces derniers sont accrédités par le Ministère du Développement Durable, Environnement et Lutte contre les Changements Climatiques (MDDELCC) du Québec, selon la norme internationale ISO/CEI 17025.

Notre département d'analyse de l'amiante dans les matériaux participe aux séquences d'examens «BAPAT» de l'AIHA américaine, est certifié professionnel par cette dernière et est reconnu par l'IRSST.

Notre département de microbiologie de l'air au site de Québec, participe aux séquences d'examens «EMPAT» de l'AIHA américaine

Ce certificat ne peut être reproduit, sinon en entier, sans l'autorisation écrite du laboratoire. Résultats applicables qu'aux échantillons soumis à l'analyse.

Asbestos Exposure (Hazardous Occurrence) July 31, 2015
CCGS Sir William Alexander

Summary

On July 31, 2015 the vessel was undergoing annual maintenance in a shipyard (Newdock) located in St. John's, NL an unknown material/debris was discovered on the deck in an passageway adjacent to an accommodation area of the vessel. Once the material was noticed a senior officer was summoned to the location and it was quickly determined that its origin was associated with the overhead electrical wire/cable chases, which were known to contain asbestos. Access to this area was restricted and the shipyard safety officer was advised. Air sampling and material sampling was undertaken by Pinchin Leblanc after which the area was professionally cleaned by Belfore.

An incident investigation was conducted; the findings were described in the IIR which was forwarded to the Safety Management section of Coast Guard. There has been a delayed follow-up on the Corrective & Preventative Measures stated in the Incident Investigation Report (IIR) due to changing personnel, conflicting priorities and the lack of established protocols to guide the personnel involved. As a result the IIR for this incident remains open with a number of concerns unanswered and corrective measures not implemented.

Incident Details

The initial investigation determined that the material originated from overhead wire/cable chases, which are located above the suspended ceiling. Anecdotal evidence suggests the material was dislodged by shipyard employees during a night shift on or about June 25, 2015. It is suspected that the asbestos containing material (ACM) remained on the deck until July 31, 2015 mostly concealed by the ceiling tiles which were leaning against the bulkhead in the immediate area where the material/debris was discovered.

As a result of the ACM remaining on the deck in the area where it was dislodged for an extended period of time employees from both shifts may have been exposed. The duration and level of exposure is conceivably different for each employee due to the location of their accommodations and their requirement to transit the area, perform duties and reside in or adjacent to the area where the ACM was discovered.

Employees would have walked through the area to get from one area of the ship to another; some personnel would have been conducting husbandry activities i.e. cleaning cabins, sweeping the alleyway deck, washing bulkheads and handrails, etc. Most likely there was more ACM originally dislodged than was discovered. It is plausible that some amount of the ACM would have been swept up during daily cleaning activities and/or tracked to other spaces by employees and shipyard workers transiting that alleyway. In the worst case scenario the potential exposure time while transiting or carrying out cleaning activities would be measured in minutes per day.

Asbestos Exposure (Hazardous Occurrence) July 31, 2015
CCGS Sir William Alexander

Generally speaking this alleyway is not a high traffic passage due to the fact that it is almost exclusively cabins with only the Ships Office, thirty feet away, being a common space with slightly higher traffic. A normal daily routine for an employee who's cabin is located in this alleyway, would include leaving their cabin in the morning to report for work, numerous return transits to their cabin for breaks or meal times and to return at the end of the work day. Regardless of the amount of transits through the area, the possible exposure time would be seconds each day, with a total daily exposure being measured in minutes.

This incident has been discussed with a number of interested parties since July 31, 2015. There have been informal discussions with the employees who were onboard; the shipboard management team has consulted with Coast Guard Safety Management and Health Canada in an effort to determine what actions are required to effectively deal with concerns and to prevent reoccurrence.

Since the initial discovery of the asbestos containing material, a number of findings and events have been identified, as follows:

- at the opening meeting for the vessel maintenance/repair, shipyard representatives were advised that asbestos was present in various locations on the vessel. A copy of the Asbestos Survey was provided at that time;
- the Certificate of Analysis for the material confirmed it contained asbestos – 50/75% Chrysotile (copy attached);
- the Inspection Report for the air sampling confirmed that fibre levels were acceptable lower than the TLV of 0.1f/cc (copy attached);
- 36 Coast Guard employees worked onboard (list attached), for varying periods of time, from June 25 to July 31, 2015;
- it is estimated that the ACM remained on the deck for 37 days;
- the employees (36) who worked onboard June 25th to July 31st may have different accumulated exposure depending on their accommodation location duties and responsibilities onboard;
- two (2) meetings were held onboard (August 3rd & 6th) to brief the employees on the situation, to convey information and to listen and note concerns;
- two (2) teleconferences were held (September 18th & 30th) with Coast Guard Safety Management, Health Canada and Shipboard Management to review the incident and coordinate an appropriate response and follow-up;

Asbestos Exposure (Hazardous Occurrence) July 31, 2015
CCGS Sir William Alexander

Concerns

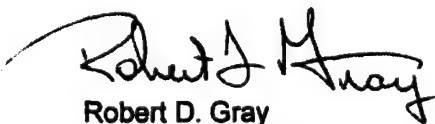
There is a suspicion that along with the larger pieces of ACM being dislodged, finer particles (dust) would have been created by the chaffing/grating during the installation of the new wires. Therefore an undetermined amount of asbestos fibres may have been present in the air for an unknown period of time during and after the wires new installation. This possibility fuels a deeper concern for employees. Employees are unfamiliar with the immediate and long term effects of this asbestos exposure. Specifically, the health issues associated with the ACM remaining in that area for an extended period and any health risks (potential) airborne fibres may or may not present.

Recommended Action

As discussed during the teleconferences (September 18th & 30th) it was agreed that as a minimum the documented information and reports of this asbestos exposure should be placed on each employees Health Canada medical file for future reference. A list of the employees present during the period of concern (June 25th to July 31st), a copy of the Pinchin LeBlanc Environmental Ltd. "Certificate of Analysis" for the bulk sample of ACM and air sample "Inspection Report" and the Incident Investigation Report (IIR) completed by the Chief Engineer are attached to this document for reference. Therefore it is requested that this report of events and attachments be placed on each of the identified employee (HC) medical file.

In addition to the file notation it is requested that an evaluation of the incident based on the information and attached documents be conducted by a Health Canada physician to determine if there are potential immediate and/or long term health issues/risks likely to be experienced by the employees concerned. Once an evaluation has been completed a written response indicating whether or not there is cause for concern should be sent to the Commanding Officer of the Sir William Alexander for dissemination by the Occupational Safety and Health committee. This effort will serve to alleviate much of the speculation currently being transmitted throughout the vessels compliment and possibly fueling unnecessary concern and anxiety.

Respectfully,



Robert D. Gray
Commanding Officer
CCGS Sir William Alexander

Cc: K. Allen
D. Monty (HC)



Fisheries and Oceans
Canada

Pêches et Océans
Canada

MEMORANDUM · NOTE DE SERVICE

To
A

Robert Gray
Commanding Officer
CCGS Sir William Alexander

From
De

Gerard O'Reilly
Logistics Officer
CCGS Sir William Alexander

Security Classification - Classification de sécurité

Our File - Notre référence

Your File - Votre référence

Date

2015-09-21

Subject
Sujet

List Of Crew Members On Board CCGS Sir William Alexander During The Following Time Period:
June-25 To July-31

North Crew

Michel Champagne
Kenneth MacDonald
Martin Atkins
Randal Brushett
Chester Cragg
David Ferguson
Danial Marsh
Jeffery Laughher
Dennis Soppitt
Jean-Marc Cormier
Stephanie Sparks-Ramsey
Denise Jones
Lisa Howe
Thomas Hilderbrandt
David Walsh

South Crew

Gerard O'Reilly
Judith Joncas
Michael Kiley
David Champion
Lorne Weinhofer
John Wood
Joanne Muron
Louie Campbell
Darren Stoodley
Kevin Hartling
Gary Hawes
Danial Allain
Garnet Boutilier
James Ayres
Heather MacKinnon
Timothy Fitzgerald
Andrew Milne
Evelyn Donovan
Joseph Boudreau
Darrell Hudgins
Kyle Hennabury



Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

August 4, 2015

Pinchin LeBlanc Environmental Ltd.
27 Austin Street, 2nd Floor
St. John's NL A1B 4C3

Attention:

Lab Reference No.: b122116
Client Project Name: PLEL, St. John's Dockyard
Client Project No.: 02-02-01544
Date Received: August 4, 2015
Date Analyzed: August 4, 2015
Analyst(s): L. DeCurtis
Samples submitted: 1
Phases analyzed: 1

Methods of Analysis:

EPA 600/R-93/116 - Method for the Determination of Asbestos in Bulk Building Materials dated July, 1993

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared with representative portions of material and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold (see chart below) indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with all provincial regulatory requirements (NIOSH 9002, I.R.S.S.T. MA-244). Multiple phases within a sample are analyzed and reported separately.

Provincial Jurisdiction	Regulatory Threshold	Provincial Jurisdiction	Regulatory Threshold
Ontario, British Columbia, Nova Scotia	0.5%	Manitoba	0.1% friable 1% non-friable
Quebec	0.1%	Saskatchewan	0.5% friable 1% non-friable
Alberta, NWT, Yukon, Nunavut	1%	Newfoundland and Labrador, PEI and New Brunswick	1%

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin Ltd. is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0) for the 'EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples' and meets all requirements of ISO/IEC 17025:2005.

This report relates only to the items tested. If you have any questions, please feel free to contact me.

Yours truly,

Digitally Signed by

Laboratory Manager, Environmental Asbestos Services
Pinchin Ltd.

NOTE: This test report may not be reproduced, except in full, without the written approval of the laboratory. The client may not use this report to claim product endorsement by NVLAP or any agency of the U.S. Government. This report is valid only when signed in blue ink by the analyst and the laboratory manager. Vinyl asbestos floor tiles contain very fine fibres of asbestos and may be missed by some laboratories using the PLM method. Internal verification studies performed by Pinchin indicate that the chance of missing asbestos in floor tiles is no higher than about 2%. The vinyl tile study and laboratory documentation on measurement uncertainty are available upon request. The analysis of dust samples by PLM cannot be used as an indicator of past or present airborne asbestos fibre levels.



Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

Client Project Name: PLEL, St. John's Dockyard
Client Project No.: 02-02-01544
Prepared For: [REDACTED]

Lab Reference No.: b122116
Date Analyzed: August 4, 2015

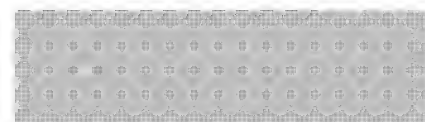
BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
02-02-1544-S001 CCGS Sir William Alexander, Parging cement from officer's deck, port side	Homogeneous, grey, soft, parging cement.	Chrysotile 50-75%	Non-Fibrous Material 25-50%

REVIEWED BY



ANALYST





Inspection Report

Project Information

Date: July 31, 2015	Pinchin Representative: [REDACTED]	Report Number: 001 Pinchin File: 02-02-TBD
Project Name: NEWDOCK Air Monitoring Services, CCGS Sir William Alexander		Site Address: CCGS Sir William Alexander, St. John's Dockyard, St. John's, NL
Client: NEWDOCK		
Contractor: Own Personnel		Arrival on Site: 11:30 AM Number of Workers: 1

Inspector:

 [REDACTED]
 Environmental Technologist
 (709) 690-9369
 [REDACTED]

Reviewed by:

 [REDACTED]
 Regional Vice President, NL
 (709) 754-4490
 [REDACTED]

Description of Work in Progress

Work Area	Work in Progress
Officer's Deck, port side	Completion of cleanup of suspect ACM debris uncovered during renovation activities

Samples Collected and Results, as Available

Sample No.	Sample Type	Location/Description	Start Time	Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Result (fibres/cc)
02-02-A001	Clearance	Officer's Deck, port side	11:45 AM	15.0	30	450	<0.04

☒ Calibration of air sampling pump checked before and after sample collection.



Inspection Report; Report Number: 001

NEWDOKK Air Monitoring Services. CCGS Sir William Alexander
CCGS Sir William Alexander St John's Dockyard St John's NL

July 31, 2015

Pinchin File 02-02-TBD
NEWDOKK

1. SAMPLES & TESTING	<input checked="" type="checkbox"/>	4. NEGATIVE PRESSURE	<input type="checkbox"/>	7. WASTE HANDLING	<input type="checkbox"/>
2. SITE ISOLATION	<input type="checkbox"/>	5. PERSONAL PROTECTIVE EQUIPMENT	<input type="checkbox"/>	8. CLEANING	<input type="checkbox"/>
3. FACILITIES/EQUIPMENT	<input type="checkbox"/>	6. DUST SUPPRESSION	<input type="checkbox"/>	9. OTHER	<input type="checkbox"/>

Item	Comments	Action
1.	<p>One (1) clearance air sample was collected in a fixed location inside the work area following the completion of removal operations. Clearance samples document objectively that the abatement area is suitable for occupancy by personnel without respiratory protection.</p> <p>The air sample was collected and analyzed by Phase Contrast Microscopy (PCM) following the NIOSH 7400 analytical method using the "A" set of counting rules for the determination of airborne fibers. Air sampling services conducted on July 31, 2015.</p> <p>Air sampling pump HV15 - calibrated at 15.0 L/min on July 31, 2015.</p> <p>Analysis of the clearance air sample indicated that fibre levels were acceptable and lower than the current TLV of 0.1f/cc.</p>	Informed Newdock representative Darryl Penney that the analysis of the clearance air sample was acceptable.
2.	NA	NA
3.	NA	NA
4.	NA	NA
5.	NA	NA
6.	NA	NA
7.	NA	NA
8.	NA	NA
9.	NA	NA

9.B.1

FISHERIES AND OCEANS CANADA
CANADIAN COAST GUARD

INCIDENT INVESTIGATION REPORT

To be **thoroughly** completed by the responsible manager with assistance from the OSH Committee Member or Representative.
Please print or type. Return completed form to Fleet Safety & Security.

A. TYPE OF OCCURRENCE	
<input type="checkbox"/> Minor Injury (First Aid Only)	<input type="checkbox"/> Minor Injury (Visit to Doctor)
<input type="checkbox"/> Unsatisfactory Condition	<input type="checkbox"/> Disabling Injury (Any Time Loss)
<input type="checkbox"/> Security Incident	
<input type="checkbox"/> Near Miss	<input checked="" type="checkbox"/> Hazardous Occurrence (select incident from "B")

B. HAZARDOUS OCCURRENCE - TYPE OF INCIDENT		
<input type="checkbox"/> Collision	<input type="checkbox"/> Grounding/Stranding/Striking	<input type="checkbox"/> Steering loss
<input type="checkbox"/> Fire	<input type="checkbox"/> Mechanical Failure	<input type="checkbox"/> Person Overboard
<input type="checkbox"/> Flooding	<input type="checkbox"/> Elect. Power Failure	<input type="checkbox"/> Pollution/Environmental
<input type="checkbox"/> Fouling Underwater Object	<input type="checkbox"/> Propulsion Failure	<input checked="" type="checkbox"/> Other <i>specify</i> : Asbestos Exposure

C. GENERAL INFORMATION					
Site or Vessel Name :	Sir William Alexander	Work Nature (Tasking)	Dry Dock / Refit	Date of Report	August 4 th 2015
Mailing Address	PO Box 1006, Dartmouth, NS, B2Y 4A2				
Responsible Supervisor's Name	Andrew Milne	Supervisor's Telephone #	(902) 456-9281		

D. EMPLOYEE DATA* (IF APPLICABLE - ONLY WHERE THERE IS AN INJURY TO AN EMPLOYEE) *ALL FIELDS MUST BE COMPLETED					
Employee's Surname	Given Name	Initials	Employee Date Of Birth		
Gender <input type="checkbox"/> Male <input type="checkbox"/> Female	Age	Number of Years of Experience in the Occupation			
Job Title	Employment Status <input type="checkbox"/> Full Time <input type="checkbox"/> Term <input type="checkbox"/> Casual / Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Contractor <input type="checkbox"/> Student <input type="checkbox"/> Other(specify): _____				

E. OCCURRENCE INFORMATION			
Occurrence Location	Date and Time of Occurrence	Hours on Shift This Day Prior to Occurrence	Hours Awake Prior to Occurrence
Officers deck port side alleyway	31 July 2015 0700 hrs	hrs	hrs
Weather Conditions At the Time of the Occurrence			
Dry Dock, warm,			
Description of Injury (if applicable)			
Was a risk assessment performed prior to commencement of the task which resulted in this occurrence? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Specify : Asbestos surveys completed annually. All information onboard pertaining to asbestos was given and discussed with the Safety department at Newdock upon arrival into the yard.			
Was accident prevention training in relation to the duties performed provided to the injured employee prior to the time of the hazardous occurrence? <input type="checkbox"/> Yes <input type="checkbox"/> No Specify: _____			

F. INVESTIGATION OF OCCURRENCE
Description of Occurrence- Sequence of Events (attach additional sheets, chartlets, diagrams as required)
On July 31 st at approximately 0700 hours a deckhand brought it to the chief engineers attention that there was a white unknown substance on the deck on the officers deck port side alleyway at the entrance to the cadets cabins. There was no one working in this area during this time. There was several pieces of a white/grey looking compound that had marks on it that suggested that it went around electrical cables. The area was sectioned off right away. A review of the asbestos annual survey from 2014 and the complete ships asbestos survey from 2006 indicated that in area 27 (officers deck alleyways) that cable chase's were known to contain 60% chrysotile non friable asbestos containing mastic compound. At 0800 hours when the shipyard workers arrived the project manager Andrew Smith was notified and he called in the yard safety foeman Mark Warren. We both reviewed the asbestos report and

9.B.1

concluded that it was a good possibility that it was an asbestos containing material. The deck head panels were down in this area while the work was being carried out which hid the larger pieces of the substance. The deckhead panels were recently installed prior to first notification. In the afternoon the shipyard had a local company Pinchin LeBlanc come in to take an air sample and a batch sample of the substance. The worker from the Pinchin LeBlanc notified myself that if the air sample contained asbestos he would let us know right away and either way we should have the results back later that day (air sample only, batch sample was sent to a testing facility out of province). After the samples were taken the shipyard safety department cleaned up the visible substance on the deck. The air results from the sample were not given over the weekend and was told verbally to the Chief Engineer from the yard safety foreman, that the sample came back indicating there was no asbestos fibres in the air. A local cleaning company Belfore arrived on the ship to clean up the alleyway and in the deckhead where the substance came from. Talking with Officer Cadet Thomas Hildebrandt who was living in the area for the previous patrol with the opposite crew said that it is likely that it came down when wires were being run around June 25th, approximately 6 weeks previous to the date of occurrence. This would have affected both North and South crews of the Sir William Alexander. The batch test sample came back at approximately 1600 hours on August 4th indicating that the substance was an asbestos containing material of the chrysotile type and contained between 50 and 75% asbestos. The RDPA was contacted on Friday July 31st for advice, and also forwarded information pertaining to a course of action to follow as well as a contact with Health Canada

G. DIRECT CAUSES

In this section please identify all personal, environmental and/or job/system factors

Shipyard safety systems failed to ensure compliance with the ships pre job safety assessment and protocols for removal of asbestos containing materials.

H. ROOT CAUSES

In this section please identify all substandard practices and/or substandard conditions if any

Through observations on shipyard safety items between the period of July 9th to August 4th that were previously mentioned to the shipyard, it is evident that the shipyard safety department has had a lack of presence on the ship and monitoring of shipyard's workers safety and compliance

I. WITNESSES (IF MORE PLEASE ATTACH INFORMATION)

Witness #1 - Name	Telephone #:	Witness #2 - Name	Telephone #:
Tom Hildebrandt	(902) 456-9281	Daniel Allain	(902) 456-9281
Witness #3 - Name	Telephone #:	Witness #4 - Name	Telephone #:
Tim Fitzgerald	(902) 456-9281		

J. CORRECTIVE & PREVENTATIVE MEASURES

Corrective measures taken and/or recommended to prevent recurrence

Recommendations from the RDPA and Health Canada are to be followed concerning the health and safety of the crew that has been exposed to an asbestos containing material.

Recommend that there be a designated and trained CCG safety officer to monitor and coordinate with shipyard safety personnel onboard during manned refit periods where liability of the vessel is not passed over to the shipyard for the vessel

Notified Newdock shipyard to conduct more diligent safety rounds at regular intervals.

K. RESPONSIBILITY FOR CORRECTIVE & PREVENTATIVE MEASURES/ACTIONS


Corrective action responsibility assigned to	Date to be completed	Follow-up date
Andrew Milne	August 6 th 2015	August 13 th 2015

L. PROPERTY DAMAGE


Estimated Loss (\$)

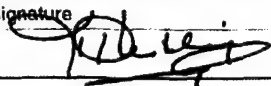
Nature & extent of property damage

M. INVESTIGATION COMPLETED BY

Name of Manager or Manager Appointee	Telephone #	Signature
Andrew Milne	(902) 456-9281	
Manager's Comment		

9.B.1

Name of OSH Committee Member / OSH Representative James Ayres	Telephone # (902) 456-9281	Signature 
OSH Committee Member / Representative Comment		

N. COMMANDING OFFICER / EMPLOYER COMMENTS		
Name of Commanding Officer or Employer Kevin Hartling	Telephone # (902) 456-9281	Signature 
Additional Comments		

Asbestos Exposure (Hazardous Occurrence) July 21, 2017

CCGS Sir William Alexander

Summary

On July 21, 2017, the vessel was undergoing annual maintenance in dry-dock at Verreault Navigation in Les Mechains, QC. A package of gaskets that had a white, furry substance on them was opened in central stores and the gaskets were spread out upon the desk. The ship-generated stock label identified them as containing asbestos was noticed after they had been unwrapped. The space was sealed off and the shipyard Safety Officer was advised. Construction SOGESCO conducted a clean-up of the space and packaged samples which were tested by Groupe Environex.

An incident investigation was conducted; the findings are described in the IIR. Actions recommended in this report expand upon those recommended in the IIR.

Incident Details

On Friday, July 21, 2017, a package of gaskets was opened up on the desk of central stores a FSR for Garlock of Canada for Fairbanks-Morse. The FSR noticed they had a white, furry substance on the surface, which was not what he expected to see. He re-read the ship-generated stock label and found that the gaskets were described as "Gasket, Asbestos and Metal". The Storekeeper came into central stores and noticed the label as well and the gaskets were re-packaged. The Storekeeper remained in the area while the FSR proceeded to the engine room to notify one of the Engineers. The Third Engineer came to central stores; advised the Storekeeper that he thought the gaskets were asbestos; retrieved the package of gaskets and took them to show his supervisor, the Senior Engineer. The Chief Engineer was notified of the situation around 1130, and Commanding Officer was notified around 1150. After a discussion with the Storekeeper and the Third Engineer about the events that transpired, central stores was sealed off with plastic sheeting, the door locked and ventilation shut down. The two employees were advised to change clothes and shower. Between the time that the package was opened, and when the space was sealed, the Electrical Officer entered the space work on the desk printer and retrieve parts from stores; he wasn't advised that there had been an Asbestos Containing Material on the desk. His involvement wasn't reported until later.

The Verreault Navigation Safety Officer was notified about the possible asbestos exposure; there were no shipyard workers in central stores at the time of the incident.

Construction SOGESCO, attended the vessel on Saturday, July 22, 2017 to conduct a clean-up of the space. We are still awaiting a copy of Mr. Pierre Gagné's certification and report. The drawer where the gaskets were stored was cleaned; all other packages in the drawer were damp wiped; as was the section of the drawer immediately below where the gaskets were stored. The desk, as well as all items on it, was either damp wiped or disposed of; the deck and chair were vacuumed. Two samples of gaskets were taken, one of the ones with the white furry substance and one with a dark grey substance. These were sealed up and retained on board until they could be sent for testing.

The samples were transferred to Groupe Environex on Tuesday, July 25, 2017 for testing. Results were received on July 27, 2017; sample #1 (a grey gasket) tested negative and sample #2 (the white gasket) tested positive for asbestos.

Asbestos Exposure (Hazardous Occurrence) July 21, 2017

CCGS Sir William Alexander

The CCG employees who were in central stores would have spent only minutes there between the time when the package was open and the space was sealed up. The gaskets were intact and there was no work done with them to cause the fibers to become airborne.

Following the initial incident, the Storekeeper did a computer search in the vessel's Inventory Management System and found additional products with "Asbestos" in the ship generated description. She registered a Refusal to Work with regards to these identified products on July 24, 2017; she was unwilling to open or search through the locations associated with these identified products. Corrective action for the refusal to work was to have samples taken of the products and sent for laboratory analysis; and remaining quantities sealed up until results are received. These actions were sufficient to end the refusal to work.

A technician from Groupe GESFOR Poirier, Pinchin was on board on July 26, 2017 to take a sample of each of the items that were found in the computer search and took them for testing. Additional quantities of these items were sealed up and retained, pending the results of the tests.

This incident has been discussed with a number of interested parties since July 21, 2017. There have been informal discussions with the employees who were onboard; the shipboard management team has consulted with Coast Guard Safety Management and Health Canada in an effort to determine what actions are required to effectively deal with concerns and to prevent a recurrence.

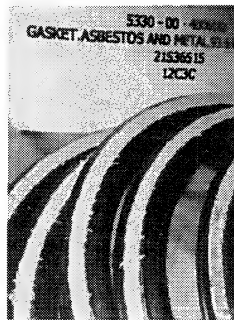


Image 1: Gaskets that were opened up on July 21, 2017.

Findings

- The Asbestos Assessment conducted on March 31, 2006 (initial) could not be easily located on board the vessel.
- The initial Asbestos Assessment included the physical structures in central stores but not the inventory items.
- The FSR for Garlock of Canada for Fairbanks-Morse located the gaskets without supervision and opened the package before noticing they were labelled "Gasket, Asbestos and Metal".
- Two gaskets that were collected on July 21 were sent for testing
 - sample 1 "Dark Grey" gasket was negative for asbestos
 - sample 2 "Light Grey" gasket contained asbestos in the non-metal portion of the gasket – 75-90% Chrysotile (test results attached)

Asbestos Exposure (Hazardous Occurrence) July 21, 2017

CCGS Sir William Alexander

- 27 CCG employees were on board the vessel; only 3 were in central stores from the time the package was open until the space was sealed up.
- 31 products itemized in the vessel's Inventory Management System contain "Asbestos" in the description. This number excludes the items inventoried as part of the "Asbestos Abatement Kit". 16 of these items have not had their descriptions in the computer updated since 2000; 14 of these items have no stock history for issue or receipt since 1995.
- Risk level for handling of items in central stores is considered to be low-risk under MOHS regulations (SOR/2017-132 June 20, 2017 Section 243) definitions "low-risk activity (c)"
- Vessel had no Vessel Specific Management Plan until earlier this cycle; vessel had received an NCR during the June 1, 2017 ISM Audit. A draft VSAMP was in development at the time of the incident.
- Unfamiliarity with Asbestos Management resulted in a delay in sealing off central stores with an additional person entering the space
- Test Results for the second batch items sampled on July 26, 2017 are still pending.

Concerns

The lack of Asbestos Awareness Training provided to crew members is of concern to all involved, both crew and management. Lack of knowledge regarding asbestos, particularly the risks involved with safe handling and storage, compounded the situation.

Knowing that the vessel has Asbestos Containing Materials on board, it is vital that crew members know the risks involved as well as how to safely handle the materials. Given that, under the VSAMP, all locations need to be marked as containing ACMs, the Awareness Training is important so that personnel understand that undisturbed, encapsulated asbestos, as is found in several locations on the vessel, is of minimal to no risk.

While reviewing the vessel's training requirements in May 2017, Asbestos Awareness Training was identified as a recommended course for all personnel; this requirement was submitted to the vessel's training coordinator on May 31, 2017.

Recommended Action

- Obtain copies of all Asbestos Assessments and annual surveys – completed July 25, 2017.
- Sample and test items identified in the IMS with "Asbestos" in the description – collected July 26, 2017; results are pending.
- Dispose of all Asbestos Containing Products for which an alternative product exists.
- Properly store and label any Asbestos Containing Products for which there is no alternative.
- Update product descriptions in the IMS to remove "Asbestos" from products determined to be Asbestos-Free.
- Ensure that contractors and other non-ship's personnel utilize the services of the Storekeeper or other crew member to access ship's stores.
- Provide all crew members with Asbestos Awareness Training.

Asbestos Exposure (Hazardous Occurrence) July 21, 2017

CCGS Sir William Alexander

- Provide select members of the crew, including the vessel's Asbestos Coordinator (Chief Engineer) with basic Asbestos Containment and Level I Clean-up Training.

Respectfully,



Carol Dudfield

A/Commanding Officer

CCGS Sir William Alexander

August 1, 2017

Cc: Rod March, Manager, CGSS

Marc Rochon, Health Canada

CCGS-NGCC, Bartlett Chief Officer

From: Jersch, Russell <Russell.Jersch@dfo-mpo.gc.ca>
Sent: June-18-18 9:58 AM
To: CCGS-NGCC, Bartlett Chief Officer
Subject: RE: Exposure Registry Program

I can't say for sure but we are working on it.
 I hope before the end of this patrol.

Russell

From: CCGS-NGCC, Bartlett Chief Officer [<mailto:BartlettCHO@ccgs-ngcc.gc.ca>]
Sent: June-18-18 7:38 AM
To: Jersch, Russell
Subject: RE: Exposure Registry Program

Ok great thanks,
 If I get the question, what will be the time frame to expect this?

Thanks,

Ryan Gurr

Chief Officer, CCGS Bartlett
Canadian Coast Guard

BartlettCHO@bar.ccg-ngcc.gc.ca

Chief Officer Cell: [REDACTED]

Ship's Cell: [REDACTED]

Victoria Base Landline: 250 480 2692

Iridium Satellite: [REDACTED]

From: Jersch, Russell [<mailto:Russell.Jersch@dfo-mpo.gc.ca>]
Sent: June-18-18 7:21 AM
To: CCGS-NGCC, Bartlett Chief Officer
Subject: RE: Exposure Registry Program

Ryan,

We are working on a more regional response to inform persons who may have been exposed to asbestos. Once its completed it'll be rolled out to the Fleet.

Russell

From: CCGS-NGCC, Bartlett Chief Officer [<mailto:BartlettCHO@ccgs-ngcc.gc.ca>]
Sent: June-12-18 2:28 PM
To: Jersch, Russell
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Engineer
Subject: Exposure Registry Program

Hello Russell Jersch,

Last week you mentioned an Occupational Health and Safety package would be prepared for the ship for our asbestos exposure. I realize crew change is quickly approaching (tomorrow), and there may not be an opportunity to get the forms before this. As an alternative, I could organize the WCB Registry forms for all the current crew and begin contacting previous crew members. I have also included this form for your records. The Health Canada doctor mentioned registering for the Health Canada Exposure program, but I have been unable to locate this form.

WCB Exposure Registry Program

<https://www.worksafebc.com/en/resources/health-care-providers/forms/exposure-registry-program-form-41m1?lang=en>

Thank you for the assistance.

Chris Couch

Chief Officer, Red Crew, CCGS Bartlett

Email: BartlettCHO@ccgs-ngcc.gc.ca

Chief Officer Cell: [REDACTED]

Ship's Tellular: [REDACTED]

Iridium Satellite: [REDACTED]

Mailing Address:

25 Huron Street

Victoria BC

V8V 4V9

McNish, Joanne

From: McNish, Joanne
Sent: Monday, June 18, 2018 3:34 PM
To: Ayres, Bob; Jersch, Russell
Subject: Fw: Bartlett/Asbestos/Rumour Mill

Sent by BB

From: McNish, Joanne <Joanne.McNish@dfo-mpo.gc.ca>
Sent: Sunday, June 17, 2018 4:48 PM
To: CCGS-NGCC, GordonReid Captain
Subject: Re: Bartlett/Asbestos/Rumour Mill

Hi Nick,

Thanks for raising it. We are working on an information package, to inform crew.

It is not major in so far as all air sampling has come back negative. Asbestos is only a potential hazard when inhaled, where fibres are airborne. Crew are not being advised to get testing, they are just being advised that WCB maintains a self identification site where anyone who feels they may have been potentially exposed can record it, in the event an asbestos related illness would occur many years from now.

All of our older ships have asbestos, and as a consequence, asbestos management plans. If not disturbed, and sealed, it is safe. Onboard the Bartlett, some dust was located a number of months ago in a hard to get to spot. It was tested, and came back positive for asbestos. Air sampling was conducted, both alongside, and at sea, throughout the past period, and came back negative each time. We then made a decision to do 'wipe tests'. Not always recommended, as a horizontal surface could have dust for many years, and not be indicative of a health risk as it has settled, and could even be coated in muck. Some of these tested positive, although the dust was sometimes hard from years of grease/moisture, etc.

Bartlett had a number of areas remediated back in the VLE in the 90's. The current 'speculation' is an area in the stack had hard to reach areas that were poorly remediate in these hard to get to areas, and some fibres may have accumulated, perhaps even early after the VLE. We are now cleaning all areas, and sealing the stack areas of the Bartlett, and to be fully thorough, have replaced pillows, mattresses, etc. It is a big project, but we want to be sure there is absolutely nothing onboard, even if some has been there for 20 years or more. Air sampling consistently, with no exception, has been negative for airborne fibres, and sampling was in multiple areas which indicates the risk low. We have hired a company that has allowed us to be very proactive.

We have been working with the Health Canada doctor, who advises the risk very low. As you know, asbestos is a naturally occurring substance, and in our natural environment.

There is no testing being suggested. The information that we are giving employees is, if they wish, they can register on the WCB site. Years ago, when asbestos was identified as being potentially hazardous, WCB set up a Web site for all workers. We will have this information in the bulletin, and it is employees choice on whether to register. The reason CG does not 'keep records' is due to record retention, and privacy of medical information and that it is only potential exposure, not exposure. Employees can also note it on the form with

HC for their medical....have you been exposed to hazardous materials. Employees that he to see, likely, should always indicating yes, given the industrial form of their workplace.

Back in the late 80s, early 90s when we first dealt with asbestos, many people documented. There is considerable more information now. Dr. Kraciew does say that almost all cases of asbestos related illness are associated with asbestos based industry (mines, brake linings, etc), not workplaces, buildings or schools where it was used.

Some people may react angrily. CG has been proactive, and taken steps when noted, and are taking aggressive steps now.

I hope the trip is going well. More comprehensive information to follow.

Joanne

Sent by BB

From: CCGS-NGCC, GordonReid Captain
Sent: Sunday, June 17, 2018 12:12 PM
To: McNish, Joanne
Subject: Bartlett/Asbestos/Rumour Mill

Joanne

With regard to the Bartlett, I'm starting to get snippets of feedback from the crew about information they are receiving from various sources.
Likely either social media or other forms of contact with people they have worked with.

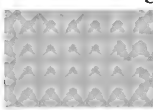
They are hearing that this is major and that testing is being recommended for crew of the Bartlett.
Many of the crew in fleet have been past crew on the Bartlett for varying amounts of time over the years so this type of conversation is concerning to them.

Is there any kind of fact sheet on what is happening and actions being taken, or other factual information that I can discuss with the crew in order to keep them updated and hopefully prevent any anxiety that the various rumour mills may cause.

Thanks,

Nick

Nicola Mancey
Commanding Officer, CCGS Gordon Reid

 Ships Cell
Portable Cell
Iridium

Ships Email: ReidCO@ccgs-ngcc.gc.ca



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6536374
Client No.:35254-83b

Location: Wheelhouse-Fwd Port Window Sill
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.:6536375
Client No.:35254-84b

Location: Wheelhouse-Mid Stbd Top Of
Console
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 925
Asbestos Type(s): Chrysotile

Lab No.:6536376
Client No.:35254-85b

Location: Wheelhouse-Mid Stbd Inside Console
Area (cm²): 100
Density (s/mm²): <15.4

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.:6536377
Client No.:35254-86b

Location: Wheelhouse-Fwd Stbd Inside Console
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 1850
Asbestos Type(s): Chrysotile

Lab No.:6536378
Client No.:35254-87b

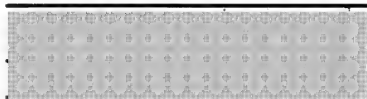
Location: Field Blank
Area (cm²): Blank
Density (s/mm²): <15.4

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Signature:
Analyst:



Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/19/2018 11:01:40

Page 1 of 3



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/19/2018 11:01:40

Page 2 of 3

001274



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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536374
Client No.: 35254-83b
Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Fwd Port Window Sill
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6536375
Client No.: 35254-84b

Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Mid Stbd Top Of Console
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 925
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

s.19(1)

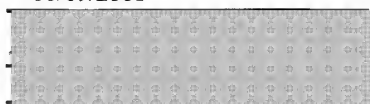
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/19/2018 11:01:41



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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536376
Client No.: 35254-85b
Volume Filtered (mL): 8
Dilution Factor (mL): 50
Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Mid Stbd Inside Console
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6536377
Client No.: 35254-86b
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Fwd Stbd Inside Console
Asbestos Structures: 2
Structures < 5 Microns: 1
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 1850
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 1
Structure Density (s/mm²): 9.62
Structure Concentration (s/cm²): 925
Non-Asbestos Type(s):
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/19/2018 11:01:41



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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536378
Client No.: 35254-87b
Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cm²): NA

Area Sampled (cm²): Blank
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

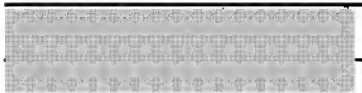
Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/19/2018 11:01:41

Page 3 of 4

001278



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Ayres, Bob

From: Ayres, Bob
Sent: Wednesday, June 20, 2018 4:32 PM
To: Chaikin, Gabriel
Subject: RE: Bartlett Air Results June 19

Thanks Gabe,

We don't yet have a firm time from HC. Hoping for tomorrow afternoon but Dr. K still needs to clear something from his schedule. We could possibly go to Friday afternoon.

Those other air samples will likely be quite helpful, thanks.

Bob

From: Chaikin, Gabriel
Sent: Wednesday, June 20, 2018 4:27 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: Re: Bartlett Air Results June 19

Bob,

Apologies. I haven't been ignoring you. Couldn't get the samples on my phone and relief Chief couldn't locate them either. Will get from computer this evening.

What time is the meeting? Noon? I'll do everything I can to be there.

I've explained everything one on one. They aren't interested in the documents though we need to present them to each. He and they will expect to hear it from the authorities.

Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: Ayres, Bob
Sent: Wednesday, June 20, 2018 12:11
To: Chaikin, Gabriel
Subject: RE: Bartlett Air Results June 19

Thanks Gabe. I'll forward this to Dr. Krawciw.

Were there also sample results from earlier in the year? In case he asks for those.

Bob

From: Chaikin, Gabriel
Sent: Wednesday, June 20, 2018 12:08 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: Fw: Bartlett Air Results June 19

Bob,

Here are the air clearance samples from the beginning of the refit until today.

Please let me know if you require anything more.

Regards,

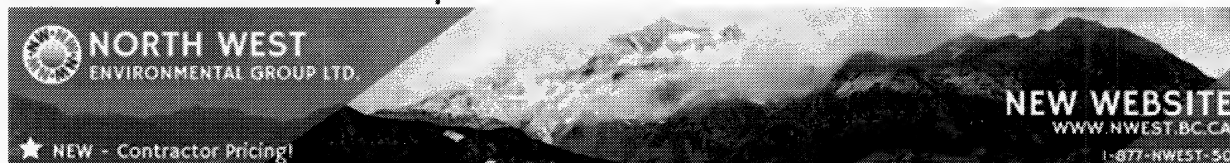
Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: [REDACTED]
Sent: Wednesday, June 20, 2018 10:26
To: Chaikin, Gabriel; Jeremy Robinson; CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: Bartlett Air Results June 19

Good morning, please find attached the air results from yesterday's sampling. All below threshold.
Please let me know if you have any questions.
Best,

[REDACTED]
Project Manager
North West Environmental Group Ltd.



#201 – 415 Gorge Road East
Victoria, B.C. V8T 2W1

C: [REDACTED]
O: (250) 384-9695 ext. 211

The information contained in this email message is privileged and confidential information intended only for the use of the party named above. If you have received this communication in error, please notify the author and delete the message from your system. Your cooperation is appreciated.

Ayres, Bob

From: Ayres, Bob
Sent: Wednesday, June 20, 2018 12:13 PM
To: 'Krawciw, Don (HC/SC)'
Subject: FW: Bartlett Air Results June 19
Attachments: 35254 AA13 V1.0 2018-06-19 - CCGS Bartlett S#1-58.pdf

Hello Don,
 Here are air samples from end of May through June. I've asked for the earlier samples as well and will advise.

Bob

From: Chaikin, Gabriel
Sent: Wednesday, June 20, 2018 12:08 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: Fw: Bartlett Air Results June 19

Bob,

Here are the air clearance samples from the beginning of the refit until today.

Please let me know if you require anything more.

Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: [REDACTED]
Sent: Wednesday, June 20, 2018 10:26
To: Chaikin, Gabriel; Jeremy Robinson; CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: Bartlett Air Results June 19

Good morning, please find attached the air results from yesterday's sampling. All below threshold.
 Please let me know if you have any questions.
 Best,

[REDACTED]
Project Manager
North West Environmental Group Ltd.



#201 - 415 Gorge Road East
 Victoria, B.C. V8T 2W1

C: [REDACTED]

O: (250) 384-9695 ext. [REDACTED]

The information contained in this email message is privileged and confidential information intended only for the use of the party named above. If you have received this communication in error, please notify the author and delete the message from your system. Your cooperation is appreciated.



**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 19, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VW	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VW	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VW	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VW	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSEB Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	VV	<	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	VV	<	Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	VV	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

2/5

s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospital	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VV	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VV	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VV	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VV	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	VV	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	VV	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Top Level / 4th Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	VV	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	W	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	W	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	W	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/ml (unprotected persons)



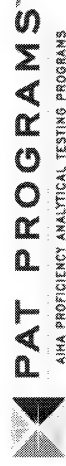
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

5/5

Ayres, Bob

From: Ayres, Bob
Sent: Wednesday, June 20, 2018 11:09 AM
To: 'Krawciw, Don (HC/SC)'
Subject: RE: Bartlett Asbestos
Attachments: Scanned from a Xerox Multifunction Printer.pdf

Hopefully this one works

From: Ayres, Bob
Sent: Wednesday, June 20, 2018 10:41 AM
To: 'Krawciw, Don (HC/SC)' <don.krawciw@canada.ca>
Subject: RE: Bartlett Asbestos

Of course. Let me know if this does not work.

Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>
Sent: Wednesday, June 20, 2018 10:25 AM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: RE: Bartlett Asbestos

Hi – can you resend the document “3rd office cabin AC dust”? I cannot open

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)
Santé Canada / Gouvernement du Canada
don.krawciw@hc-sc.gc.ca / Tél. : 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [<mailto:Bob.Ayres@dfo-mpo.gc.ca>]
Sent: 2018-06-13 4:26 PM
To: Krawciw, Don (HC/SC)
Subject: RE: Bartlett Asbestos

Hi again Don,

We have decided to do up a regional bulletin for awareness of employees, regarding asbestos and lead paint.

In that bulletin we would like to include a little bit of background to the issues – perhaps something along the lines of what was discussed on Friday touching on uses and presence of these products in the workplace, the changes in thresholds over the years and to attempt to place risk and potential exposure in context, etc.

We hope to have this bulletin ready for distribution by the later part of next week at the latest.

The attached IIRs and lead paint result were received by our office on Tuesday of this week and may provide additional context.

Regards,
Bob

From: Ayres, Bob
Sent: Monday, June 11, 2018 3:20 PM
To: 'Krawciw, Don (HC/SC)' <don.krawciw@canada.ca>
Subject: RE: Bartlett Asbestos

Thanks Don – will do.
Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>
Sent: Monday, June 11, 2018 2:47 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: RE: Bartlett Asbestos

Thanks Bob – I've forwarded this along – please check back with me in 2 weeks if you haven't heard from me or someone at Health Canada before then.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)
Santé Canada / Gouvernement du Canada
don.krawciw@hc-sc.gc.ca / Tél. : 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [<mailto:Bob.Ayres@dfo-mpo.gc.ca>]
Sent: 2018-06-11 12:47 PM

To: Krawciw, Don (HC/SC)
Subject: Bartlett Asbestos

Hello Don,
Apologies for delay in getting this to you today – morning got busy.

Attached are the reports from testing on Bartlett.

1. AB1 is the bulk sample from May 17th
2. ABWIPE1 is wipe test from various locations on board – report date May 23rd
3. Pb1 is the lead sample from paint on metal – report date May 21st
4. 551806441 is the more recent dust sampling (collected May 31st) which includes the results from the stack (funnel) on Bartlett

As discussed we'd be very interested in the assistance of your industrial hygienist in providing a review of these sampling results.

Any expert of informed opinion would be welcome with regard interpretation of the numbers in the various reports and the likely meaning of these to our employees who have potentially been exposed.

Cleaning and remediation efforts are currently underway. We are considering how best to communicate further to employees past and present regarding potential exposure and documenting of this potential in case (hopefully not) of need for future claim etc.

Thanks again for coming down and speaking with our people on Friday. It was very helpful.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: [REDACTED]
E-mail: bob.ayres@dfo-mpo.gc.ca

INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence.

A. Type of Incident (Required) (Choose only one)

- | | |
|---|--|
| <input type="checkbox"/> Disabling Injury (visit to medical professional, time lost) | <input type="checkbox"/> Loss of Consciousness due to electric shock or toxic atmosphere |
| <input type="checkbox"/> First Aid | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Minor Injury (visit to medical professional, no time lost) | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> Activation of an Emergency Procedure | <input type="checkbox"/> Property Damage |
| <input type="checkbox"/> Fire or Explosion (Shore only) | <input checked="" type="checkbox"/> Unsatisfactory Condition |
| <input type="checkbox"/> Other (specify) | |

B. General Information (Required)

Employer's (Department) Name <div style="border: 1px solid black; padding: 2px;">Canadian Coast Guard</div>		Site/Vessel Name (and official number) <div style="border: 1px solid black; padding: 2px;">CCGS Bartlett</div>																									
Date of Report (YYYY-MM-DD) <div style="border: 1px solid black; padding: 2px;">2018-06-11</div>	Mailing Address <div style="border: 1px solid black; padding: 2px;">25 Huron Street Victoria BC V8V 4V9</div>																										
Name of Responsible Supervisor <div style="border: 1px solid black; padding: 2px;">Captain Mike McCullagh</div>		Supervisor's Telephone # <div style="border: 1px solid black; padding: 2px;">250-213-3864</div>																									
Organization (Select One)																											
<input type="checkbox"/> National HQ <input type="checkbox"/> Coast Guard College <input checked="" type="checkbox"/> Region (if selected, choose Directorate and Program/Branch below)																											
Regional Directorate (Select One)																											
<input type="checkbox"/> AC's Office <input checked="" type="checkbox"/> Fleet <input type="checkbox"/> IBMS <input type="checkbox"/> ITS <input type="checkbox"/> Incident Management <input type="checkbox"/> Navigational Programs																											
Program/Branch (Select One)																											
<table border="0" style="width: 100%;"> <tr> <td><input type="checkbox"/> AtoN</td> <td><input type="checkbox"/> MarSup</td> <td><input checked="" type="checkbox"/> Refit and Maintenance</td> </tr> <tr> <td><input type="checkbox"/> Canso</td> <td><input type="checkbox"/> MCI</td> <td><input type="checkbox"/> ROC</td> </tr> <tr> <td><input type="checkbox"/> CGSS</td> <td><input type="checkbox"/> MCTS</td> <td><input type="checkbox"/> SAR</td> </tr> <tr> <td><input type="checkbox"/> E&I</td> <td><input type="checkbox"/> ME</td> <td><input type="checkbox"/> Science</td> </tr> <tr> <td><input type="checkbox"/> EFM (C&P)</td> <td><input type="checkbox"/> MNS</td> <td><input type="checkbox"/> Vessels of Concern</td> </tr> <tr> <td><input type="checkbox"/> ER</td> <td><input type="checkbox"/> MSET</td> <td><input type="checkbox"/> Other </td> </tr> <tr> <td><input type="checkbox"/> Ice</td> <td><input type="checkbox"/> Ops Business</td> <td></td> </tr> <tr> <td><input type="checkbox"/> ILS</td> <td></td> <td></td> </tr> </table>				<input type="checkbox"/> AtoN	<input type="checkbox"/> MarSup	<input checked="" type="checkbox"/> Refit and Maintenance	<input type="checkbox"/> Canso	<input type="checkbox"/> MCI	<input type="checkbox"/> ROC	<input type="checkbox"/> CGSS	<input type="checkbox"/> MCTS	<input type="checkbox"/> SAR	<input type="checkbox"/> E&I	<input type="checkbox"/> ME	<input type="checkbox"/> Science	<input type="checkbox"/> EFM (C&P)	<input type="checkbox"/> MNS	<input type="checkbox"/> Vessels of Concern	<input type="checkbox"/> ER	<input type="checkbox"/> MSET	<input type="checkbox"/> Other 	<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business		<input type="checkbox"/> ILS		
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<input type="checkbox"/> Ice	<input type="checkbox"/> Ops Business																										
<input type="checkbox"/> ILS																											

C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed.

Surname 	Given Name 	Initial(s) 	Age
Gender <input type="checkbox"/> Female <input type="checkbox"/> Male		Job Title <div style="border: 1px solid black; padding: 2px; height: 1.2em;"></div>	
Years of experience in current position		<div style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em;"></div>	
Employment Status			
<input type="checkbox"/> Indeterminate <input type="checkbox"/> Term <input type="checkbox"/> Casual/Relief <input type="checkbox"/> Program Client <input type="checkbox"/> Student <input type="checkbox"/> Contractor			
<input type="checkbox"/> Other (Specify) 			

D. Incident Information (Required)

Did this involve a motor vehicle* accident? Yes ☐ No ☒ *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.

Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☒

Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)

Secured alongside Victoria Coast Guard Base.

Date of Incident (YYYY-MM-DD)

2018-06-06

Time of Incident (Local)

17:00

Body part injured (if applicable)

☐ Abdomen ☐ Back ☐ Eye ☐ Neck ☐ Knee ☐ Pelvis / Groin
☐ Arm ☐ Body System / Internal ☐ Foot ☐ Head ☐ Leg ☐ Shoulder
☐ Auditory ☐ Chest ☐ Hand ☐ Hip ☐ Multiple injuries ☐ Unknown

Nature of injury (if known)

☐ Burns ☐ Multiple Injuries
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations
☐ Intracranial Injury ☐ Unknown

E. Investigation Information (Required)

Type of Event

☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls
☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against
☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident
☐ Exposure to Fire ☐ Overexertion ☒ Other (specify)
☐ Exposure to heat/cold ☐ Repetitive Motion
☐ Exposure to noise

Unknown dust identified as containing Asbestos

Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)

June 6, 2018 Dust wipe results for samples taken on May 31 were received. The dust wipe sample taken on the 3rd Officer's fridge came back with 16,100 asbestos structures per cm2. This is above the normal experienced standard levels according to the International Asbestos Testing Laboratories.

Inspection of the cabin found there were 6 screw holes within 24" of the sample location. The holes were in the Asbestos containing Marinite bulkhead lining panel. Two of the six looks as if the screws were pulled from the panel.

Moderate risk work procedures were performed by ship's crew to vacuum then wet wipe the effected area. Silicone caulk was used to seal openings.

Attached:

EMSL Canada Inc Dust Wipe Results

Photo of bulkhead

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?

☐ Yes ☒ No

Specify

Pre-job safety assessment performed by clean-up/repair crew.

Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?

☐ Yes ☒ No

Specify

F. Immediate/Direct Causes (Required) (Check all that apply)

Substandard Actions	Substandard Conditions
<input type="checkbox"/> Bypassing safety devices	<input type="checkbox"/> Congested or restricted area
<input type="checkbox"/> Failure to check or monitor	<input type="checkbox"/> Defective tools, equipment or materials
<input type="checkbox"/> Failure to communicate/coordinate	<input type="checkbox"/> Excessive noise
<input type="checkbox"/> Failure to follow procedure/policy	<input type="checkbox"/> Heat/cold exposure
<input checked="" type="checkbox"/> Failure to identify hazard/risk	<input type="checkbox"/> Inadequate/improper PPE or use of PPE
<input type="checkbox"/> Failure to react/correct	<input type="checkbox"/> Inadequate communication
<input type="checkbox"/> Failure to service equipment properly	<input type="checkbox"/> Inadequate guards or barriers
<input type="checkbox"/> Failure to use PPE	<input type="checkbox"/> Inadequate information/data
<input type="checkbox"/> Failure to warn or secure	<input type="checkbox"/> Inadequate instruction/procedure
<input type="checkbox"/> Horseplay	<input type="checkbox"/> Inadequate preparation/planning
<input type="checkbox"/> Improper lifting	<input type="checkbox"/> Inadequate support/assistance
<input type="checkbox"/> Improper loading, placing, mixing	<input type="checkbox"/> Inadequate ventilation
<input type="checkbox"/> Improper position/posture for task	<input type="checkbox"/> Inadequate warning system
<input type="checkbox"/> Operating at improper speed	<input type="checkbox"/> Lack of tools, equipment or materials
<input type="checkbox"/> Using defective equipment	<input type="checkbox"/> Poor housekeeping
<input type="checkbox"/> Using equipment improperly	<input checked="" type="checkbox"/> Presence of harmful materials
<input type="checkbox"/> Other action (Specify)	<input type="checkbox"/> Radiation exposure
	<input type="checkbox"/> Uneven ground/terrain
	<input type="checkbox"/> Weather or environmental conditions
	<input type="checkbox"/> Other condition (Specify)

Immediate/Direct Causes (Required)

Of the above checked immediate/direct causes provide details as to which one was the leading cause of the incident.

Standing Orders about cabin modification not adhered to.

Chief Engineer not consulted prior to ACM work or notified of damage to ACM bulkhead lining panel.

G. Basic/Root Causes (Required) (Check all that apply)

Personal Factors	Job Factors
<input type="checkbox"/> Emotional stress <input type="checkbox"/> Fatigue <input type="checkbox"/> Lack of knowledge and/or skill <input type="checkbox"/> Physical stress or capability <input type="checkbox"/> Rushing or inattention <input type="checkbox"/> Other (Specify) <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	<input type="checkbox"/> Abuse or misuse of equipment <input type="checkbox"/> Inadequate engineering or design <input type="checkbox"/> Inadequate hazard assessment <input type="checkbox"/> Inadequate personnel to complete task <input type="checkbox"/> Inadequate tools/equipment/materials <input type="checkbox"/> Inadequate training and/or familiarization <input type="checkbox"/> Inadequate work standard/procedure <input checked="" type="checkbox"/> Lack of enforcement of procedure or supervision <input type="checkbox"/> Standards/procedures not developed <input type="checkbox"/> Wear and tear <input type="checkbox"/> Other (Specify) <div style="border: 1px solid black; height: 20px; width: 100%;"></div>

Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.
 Commanding Officer's Standing Orders B10-S3-02 Accommodation Maintenance. Cabin modification are not permitted without consultation with both Commanding Officers.
 Safety Manual S1-07 Asbestos Containing Materials. Work on ACM requires authorization from Chief Engineer.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson CE	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Steve Buss SE			

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
None.	

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Clean up and repair completed by trained ship's crew.
 Quantum Murray performed cabin clean up with oversight from NWE after crew's cleanup and repair.
 Air clearance and visual inspection by NWE passed.
 Ship's Crew reminded that ACM modifications are prohibited and to report cabin deficiencies regardless of severity.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer/Chief Officer	2018-07-11	2018-07-11

K. Investigation Completed By (Required)

Name of person investigating	Telephone #	Signature
Matthew Jackson	250-882-1273	Matt Jackson <small>Digitally signed by Matt Jackson DN: cn=Matt Jackson, ou=Coast Guard, ou=Coast Guard email=MattJ@ccgs-ngcc.gc.ca, c=CA Date: 2018.06.12 12:38:11 -0700</small>
Title	Date (YYYY-MM-DD)	
Chief Engineer	2018-06-11	
Email address	BartlettCE@ccgs-ngcc.gc.ca	

Investigators comments

Source of contamination identified, cleaned and sealed.

L. Workplace OHS Committee / Health and Safety Representative Participation (Required)

Workplace OHS Committee Member / Health and Safety Representative Information

Name	Telephone #	Signature
Steve Buss	250-213-3685	Steve Buss <small>Digitally signed by Steve Buss DN: cn=Steve Buss, ou=Canadian Coast Guard, ou=CCG email=SteveB@ccgs-ngcc.gc.ca, c=CA Date: 2018.06.12 12:53:11 -0700</small>
Title	Email address	Date (YYYY-MM-DD)
Senior Engineer	BartlettSE@ccgs-ngcc.gc.ca	2018-06-12

Workplace OHS Committee Member/Health and Safety Representative comments

Fully agree with comments above, will be discussed at next meeting of OHS Committee.

M. Commanding Officer or Superintendent/Manager (Required)

Name of Commanding Officer / Responsible Manager	Telephone #	Signature
Mike McCullagh	250-882-3864	Michael McCullagh <small>Digitally signed by Michael McCullagh DN: cn=Michael McCullagh, ou=Canadian Coast Guard Fleet, ou=CCG, email=MikeM@ccgs-ngcc.gc.ca, c=CA Date: 2018.06.11 10:58:29 -0700</small>
Title	Email address	Date (YYYY-MM-DD)
Commanding Officer	bartlettCO@ccgs-ngcc.gc.ca	2018-06-12

Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? ☒ Yes ☐ No

Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"

The crew are reminded that:
As per Commanding Officer's Standing Orders B10-S3-02 Accommodation Maintenance - Cabin modification are not permitted without consultation with both Commanding Officers.
As per Safety Manual S1-07 Asbestos Containing Materials - Work on ACM requires authorization from Chief Engineer.

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and

the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

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DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca.

McNish, Joanne

From: Ayres, Bob
Sent: Wednesday, June 20, 2018 12:48 PM
To: McNish, Joanne; Jersch, Russell
Cc: Ormiston, Glenn
Subject: RE: Draft bulletin

Thank you Joanne,
I've incorporated your suggestions.

I'll look to tweak the wording regarding the other testing. Are there particular concerns regarding the testing or results or is the intent just to reinforce the efforts underway?

I spoke briefly with Dr. Krawciw and he is currently reviewing the air sampling results (he wanted to be fully comfortable with the very low risk statement). Assuming he agrees to our language, yes I will ask the AC to approve and we can send it to all.

Regards,
Bob

From: McNish, Joanne
Sent: Wednesday, June 20, 2018 12:11 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>; Jersch, Russell <Russell.Jersch@dfo-mpo.gc.ca>
Cc: Ormiston, Glenn <Glenn.Ormiston@dfo-mpo.gc.ca>
Subject: Re: Draft bulletin

Bob,
Very well presented. I have a few suggested edits for the 3 introduction paragraphs, in red below.

I also think it is worthwhile to add a paragraph on the different tests, including wipe samples, etc. There is some misinformation currently circulating.

To confirm, we will finish this today, have Kevin sign, and send to all staff from AC?

Thank you
Joanne

Issue

Increased awareness for both Fleet and shore based employees as to the presence of asbestos containing materials (ACM) and lead paint in older CCG ships and structures as a result of recent findings on the CCGS Bartlett.

Target Audience

Canadian Coast Guard personnel, most notably those with potential exposure to hazardous materials, specifically asbestos and lead paint, in the course of their work.

Purpose of Bulletin

The purpose of this bulletin is to inform employees of the potential of these hazardous materials in many of our workplaces, to identify the risks and mitigation measures, provide information, identify appropriate controls and to outline options for documentation of potential exposure.

Sent by BB

From: Ayres, Bob
Sent: Wednesday, June 20, 2018 8:32 AM
To: 'Krawciw, Don (HC/SC)'; McNish, Joanne; Jersch, Russell
Subject: RE: Draft bulletin

Based in part on early feedback and internal review I've revised the draft. If reviewing now please refer to this version dated June 20th.

Bob

From: Ayres, Bob
Sent: Tuesday, June 19, 2018 3:30 PM
To: 'Krawciw, Don (HC/SC)' <don.krawciw@canada.ca>; McNish, Joanne <Joanne.McNish@dfo-mpo.gc.ca>; Jersch, Russell <Russell.Jersch@dfo-mpo.gc.ca>
Subject: Draft bulletin

Hello,

Attached is a draft of the bulletin for review and comment.

Don, I would be interested in your and your hygienists opinion regarding the bulletin overall but in particular those statements where I have referred to Health Canada perspective and roles.

Joanne and Russell, do you feel we have the tone right in this?

Thank you,
Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: 
E-mail: bob.ayres@dfo-mpo.gc.ca

Ayres, Bob

From: Ayres, Bob
Sent: Thursday, June 21, 2018 11:01 AM
To: McNish, Joanne; Jersch, Russell; Ormiston, Glenn; Bennett, Bob; Readman, Tristan; Kellow, Graeme; Lawson, Jesse; Specht, Rick; Granger, Louise Anne; Chaikin, Gabriel
Cc: CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca); CCGS-NGCC, Bartlett Chief Engineer (BartlettCE@ccgs-ngcc.gc.ca)
Subject: Health Canada Asbestos Discussion - Vic Base - Friday June 22 at 1330, Shop's Lunchroom

Hello All,

Dr. Krawciw from Health Canada has confirmed that he can attend at Vic Base for another discussion related to the asbestos situation on the Bartlett. We will use the shop's lunchroom once again and will start at 1330.

Gabe, as before it would be helpful to have the specialists from NW Environmental attend as well. Their perspective was appreciated.

This is also an opportunity for other groups with similar concerns from other work environments to listen in and ask related questions.

Regards,
Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: [REDACTED]
E-mail: bob.ayres@dfo-mpo.gc.ca

Ayres, Bob

From: Ayres, Bob
Sent: Thursday, June 21, 2018 10:14 AM
To: 'Krawciw, Don (HC/SC)'
Subject: FW: Bartlett air results Feb 9
Attachments: 34741 AA1 V1.0 2018-02-09 - CCGS Bartlett Air Monitoring at Sea S#1-13.pdf

One more air sample result from Feb.

Bob

From: Chaikin, Gabriel
Sent: Thursday, June 21, 2018 9:57 AM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: Fw: Bartlett air results Feb 9

Hi Bob,

Good day. Please see attached air results from Feb 9th of this year.

Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: McMillan, Cody <cody.mcmillan@dfo-mpo.gc.ca>
Sent: Thursday, June 21, 2018 09:54
To: Chaikin, Gabriel
Subject: FW: Bartlett air results Feb 9

Cody McMillan
Marine Engineering | Ingénierie navale
(250) 363-8533

From: CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca>
Sent: February-09-18 9:51 PM
To: CCGS-NGCC, Bartlett Captain <BartlettCO@ccgs-ngcc.gc.ca>; Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>; McMillan, Cody <cody.mcmillan@dfo-mpo.gc.ca>
Cc: Wright, Edward <Edward.Wright@DFO-MPO.GC.CA>
Subject: FW: Bartlett air results Feb 9

We are heading out.

I think today's testing and results were worth the time and money to help answer questions about our living/working conditions onboard.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: [REDACTED]
Sent: February-09-18 9:40 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: Joel Shandro; Grant Rogers; Julie Scott-Moncrieff
Subject: Bartlett air results Feb 9

Hi Matt, please find attached the lab results from today's at sea testing. We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits.

Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer.

Please let me know if you have any questions.

Best,
[REDACTED]

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**Pages 1303 to / à 1304
are duplicates of
sont des duplicatas des
pages 612 to / à 613**

s.16(2)

Ayres, Bob

From: Ayres, Bob
Sent: Thursday, June 21, 2018 6:58 AM
To: Mah, Richard
Subject: RE: Worksafe BC Exposure Registry

Good morning Richard,
Are you able to confirm that these Exposure Registry confirmations should go to your office, for the record?

We have not yet sent the notice but hope to do so soon.

Thank you,
Bob

From: Ayres, Bob
Sent: Tuesday, June 19, 2018 1:02 PM
To: Mah, Richard <Richard.Mah@dfo-mpo.gc.ca>
Cc: Luu, John <John.Luu@dfo-mpo.gc.ca>; Clements, Brian <Brian.Clements@dfo-mpo.gc.ca>; Shivji, Yasmin <Yasmin.Shivji@dfo-mpo.gc.ca>
Subject: Worksafe BC Exposure Registry

Hello Richard,
We have an ongoing asbestos issue in some of our worksites and recently some of our folks have become aware of the Worksafe BC Exposure Registry.

As some of our employees have we believe started to use this online form we are preparing to send out a note (within a day) to employees clarifying how this should be done. The point in question is that the online form includes "Employer Information" and asks for the firm name and address. Our thinking is that may best be entered as Department of Fisheries and Oceans, Safety & Health Services, #200 – 401 Burrard St. etc.

I've confirmed with the registry that they do mail back a confirmation to both the employee and the employer. Would you agree that these should go back to your office as the keeper of our Worksafe data?

Thanks very much,
Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: [REDACTED]
E-mail: bob.ayres@dfo-mpo.gc.ca

Ayres, Bob

From: Ayres, Bob
Sent: Thursday, June 21, 2018 6:46 AM
To: 'Krawciw, Don (HC/SC)'
Subject: FW: Bartlett Asbestos Update
Attachments: Background Air Testing Results.pdf; Background Testing proposal.pdf; Initial WH Wire Insulation Test Results.pdf; Laundry Room Air Test Results after first cleanup.pdf; Laundry Room Dust Test Results.pdf; NWE Risk Assessment and Safe Work Procedures for abatement work.pdf; Pyrometer Wire and Packing Test Results.pdf; Wheelhouse Consol Dust Test Results.pdf

Some additional samples and related documents (though some may be repeats to what you have) and correspondence between ships engineers.

Bob

From: Chaikin, Gabriel
Sent: Wednesday, June 20, 2018 8:35 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: FW: Bartlett Asbestos Update

Bob,

This is some context provided from Matt Jackson in February for the testing conducted to that point.

Regards,

Gabe

From: CCGS-NGCC, Bartlett Chief Engineer [BartlettCE@ccgs-ngcc.gc.ca]
Sent: February 5, 2018 11:02 AM
To: [REDACTED]
Cc: Chaikin, Gabriel
Subject: Bartlett Asbestos Update

Hi Ross,

[REDACTED] but I would like to update you on the asbestos situation onboard.

The wire insulation you had tested at the end of you patrol came back positive for Chrysotile asbestos in the insulation (not the insulation covering).

We had NWE come in and perform dust sampling in the wheelhouse consoles to check for contamination. IIR submitted prior to receiving results. There was a mistake at the lab and the first set of samples were not analyzed with the correct procedure.

During a short sea trial period we contacted the dock in way of the aft port hole in the laundry room. Minor deformation of the shell plating but the movement split a bulkhead seam and caused a crack in one of the ACM panels in the laundry room. The space was closed off after discover and Canadian Hazmat called in to clean up and encapsulate. IIR submitted. Post clean-up air test proved good but some dust behind the washing machines was not cleaned so samples were taken to determine if additional cleaning was required. This happened at the same time we found out about the mistake at the lab for our bridge dust samples.

Consoles resampled and results were expected the afternoon after we sailed.

First set of results were received and the dust behind the washing machines showed moderate contamination above normally experienced levels (International Asbestos Testing Laboratories) having not received the results from the bridge the plan was to proceed to the Port Hardy to have additional work performed. We received the results from the Bridge a couple hours later and they return with high levels of contamination in the dust present on the consoles. The decision was made to return to Victoria for further testing and development of an abatement plan.

NWE developed a Background Sampling plan which included dust wipes in the MCR, ER and HVAC return air duct as well as 10 air sampling locations throughout the ship. We are still awaiting the results of the dust wipes (Tuesday morning/afternoon).

The air sampling results are attached. During both days of air testing the ship was occupied with normal traffic, ventilation systems were operated as per normal, and the main engines and generators were run for apx 2 hours each day to increase vibration throughout the ship. As per NWE: As before (the first days lower volume samples) all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

Additional ACM identified: the wiring for the old pyrometer display contains 30% Chrysotile. Packing storage in the STBD MCR some of the old white packing contains 30% Chrysotile.

NWE is providing oversight and air clearance for the following abatement jobs performed by Canadian Hazmat:

- wheelhouse including consoles
- wheelhouse void as the console wire ways to this space are not sealed and the space contains significant unidentified dust
- laundry room (moving machines to continue wipe down)
- ER pyrometer wire removal
- MCR console dust and pyrometer wire removal
- STBD MCR stores disposal of packing and cleanup of adjacent area

The first day of abatement was yesterday with work proceeding on the bridge. As now the anticipated completion time for the clean-up is Friday.

Please let me know your thoughts, comments or concerns.
I have cc'd Gabriel as he is taking over from Cody for the week.

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca



**North West
Environmental Group Ltd.**

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1
Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Background Testing

Date: February 03, 2018
Client Job or PO#: NEED
Project number: 34694

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
34694-3a	Feb-02-2018	Feb-02-2018	(AMB) Control Room	AMB	JD	2.04	12:05	14:12	127	0.5	100	259.08	0.64	<0.01	W	<	
34694-4a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley Aft	AMB	JD	5.12	11:33	14:46	193	4.0	100	988.16	5.10	<0.01	W	<	
34694-5a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley FWD	AMB	JD	5.12	11:42	14:47	185	3.0	100	947.2	3.82	<0.01	W	<	
34694-6a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Oilers Aft Cabin	AMB	JD	2.04	11:22	14:01	159	2.0	100	324.36	2.55	<0.01	W	<	
34694-7a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Winchman's Cabin	AMB	JD	2.61	11:19	13:58	159	3.0	100	414.99	3.82	<0.01	W	<	
34694-8a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Alley	AMB	JD	5.1	11:07	16:44	337	2.5	100	1718.7	3.18	<0.01	W	<	
34694-9a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Logistic Officer's Cabin	AMB	JD	2.5	10:59	13:56	177	3.5	100	442.5	4.46	<0.01	W	<	
34694-10a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Lounge	AMB	JD	2.8	10:55	13:47	172	3.5	100	481.6	4.46	<0.01	W	<	
34694-11a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Alley	AMB	JD	5.12	11:54	16:58	304	1.5	100	1556.48	1.91	<0.01	W	<	
34694-12a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Chief Officer's Cabin	AMB	JD	2.36	11:47	14:19	152	5.5	100	358.72	7.01	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
34694-13a	Feb-02-2018	Feb-02-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34694-23a	Feb-02-2018	Feb-02-2018	(AC) Poop Deck Lounge	AC	JD	13.56	14:27	16:55	148	6.5	100	2006.88	8.28	<0.01	V	<	
34694-24a	Feb-03-2018	Feb-03-2018	(AMB) Boat Deck Chief Officer (Location 1)	AMB	JD	2.47	08:26	18:42	616	4.5	100	1521.52	5.73	<0.01	W	<	
34694-25a	Feb-03-2018	Feb-03-2018	(AMB) Boat Deck Alley (Location 2)	AMB	JD	2.54	07:55	17:43	588	4.0	100	1493.52	5.10	<0.01	W	<	
34694-26a	Feb-03-2018	Feb-03-2018	(AMB) Poop Deck Lounge (Location 3)	AMB	JD	2.54	07:50	17:40	590	4.5	100	1498.6	5.73	<0.01	W	<	
34694-27a	Feb-03-2018	Feb-03-2018	(AMB) P. Deck Logistics Officer Cabin (Location 4)	AMB	JD	2.54	08:06	17:55	589	5.5	100	1496.06	7.01	<0.01	V	<	
34694-28a	Feb-03-2018	Feb-03-2018	(AMB) Poop Deck Alley (Location 5)	AMB	JD	2.54	07:57	17:45	588	7.5	100	1493.52	9.55	<0.01	V	<	
34694-29a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Winchman's Cabin (Location 6)	AMB	JD	2.54	08:16	18:00	584	6.0	100	1483.36	7.64	<0.01	V	<	
34694-30a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Oilers Aft Cabin (Location 7)	AMB	JD	2.54	08:12	17:51	579	15.0	100	1470.66	19.11	<0.01	V	<	
34694-31a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Alleyway Aft (Location 8)	AMB	JD	2.54	08:05	17:49	584	2.0	100	1483.36	2.55	<0.01	W	<	
34694-32a	Feb-03-2018	Feb-03-2018	(AMB) Upper Deck Alley FWD (Location 9)	AMB	JD	2.54	08:01	17:45	584	2.0	100	1483.36	2.55	<0.01	W	<	
34694-33a	Feb-03-2018	Feb-03-2018	(AMB) Above Tank Top Control Room (Location 10)	AMB	JD	2.52	08:21	18:04	583	7.0	100	1469.16	8.92	<0.01	V	<	
34694-34a	Feb-03-2018	Feb-03-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	2.0	100	0	2.55	<0.01			
34694-35a	Feb-03-2018	Feb-03-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. WWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml
 AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml
 OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)
 AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.
 QC - quality control: Blank field testing for quality assurance.
 OL - overloaded: This is when the air sample is so overloaded that it is unreadable.
 VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)
 V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)
 Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314



**North West
Environmental Group Ltd.**

201 – 415 Gorge Road East
Victoria BC V8T 2W1

Tel: 250-384-9695

Fax: 250-384-9865

e-mail: [REDACTED]

File No. 34694 P1 V1.0

Via Email

1 February 2018

Matt Jackson
Canadian Coast Guard
20 Huron Street
Victoria, BC, V8V 4V9

Attention: Matt Jackson, Chief Engineer
Re: Proposal for Background Asbestos Testing on the CCGS BARTLETT

North West Environmental Group Ltd. (NWest) is pleased to present a proposal for background testing throughout the vessel to look for evidence of the spread of asbestos contamination. The Bartlett is alongside at 20 Huron Street in Victoria, BC. NWest will undertake surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether fibres have been rendered airborne during normal ship use while alongside.

Scope of Work

The ambient air sampling and surface wipe sampling plan is summarized in the following table. Note that sample quantities are approximate as site conditions may require additional sample collection.

DECK	LOCATION	AMBIENT AIR SAMPLING	SURFACE WIPE SAMPLING
Above Tank Top	Engine Room	0	4
	Control Room	1	2
Upper Deck	Alleyway	2	0
	Bosun's Cabin	1	0
	Crew Cabin	1	0
Poop Deck	Alleyway	1	0
	2 nd Officer's Cabin	1	0
	Lounge	1	
	Return Air Vent	0	1
Boat Deck	Alleyway	1	0
	Chief Officer's Cabin	1	0
Estimated totals		10 + 2 field blanks	7 + 2 field blanks

Estimate

NWest will complete the above noted scope of work on a Time and Materials basis, estimated to be \$7712, taxes not included. Site work will be conducted during a work week day, during regular hours (8 am- 5 pm). Costs for work conducted on overtime, weekend and or statutory holidays is not included. A breakdown of budget estimate is as follows.



North West
Environmental Group Ltd.

Background Asbestos Testing
CCGS BARTLETT

NWest Project No. 34694
February 1, 2018

ITEM	TASK	UNITS (ESTIMATE)	RATE	EXTENTION
1	Project Manager: project design, coordination, travel, site work.	24 hours	per hour	
2	Project Manager: reporting	8 hours	per hour	
3	Senior Project Manager: review, consultation	4 hours	per hour	
4	Principal in Charge: review, consultation	3 hours	per hour	
5a	Sample Analysis: Ambient Air	12 samples	each	
5b	Sample Analysis: Ambient Air (additional samples, if required due to site conditions)	TBD	each	TBD
6	Sample Analysis: Surface Wipe	9 samples	each	
7	Disbursements (mileage, courier, communication)	1		
ESTIMATED TOTAL, taxes extra				\$7712

Limitations

The following limitations apply:

1. NWest requires safe access to compartments.
2. NWest requires access to electrical outlets to run air monitoring pumps.
3. NWest is not responsible for costs incurred due to delays in shipping, travel, or delivery of analytical results from laboratories. Additional costs are the responsibility of the client.
4. Mileage fees are waived.
5. Work is Monday to Friday between 8 am and 5 pm. Overtime excluded.
6. These types of testing may not be able to determine the source of asbestos contamination, but rather, will be able to determine whether contamination exists.


NOTE: Sampling pumps are noisy. NWest will coordinate with CCG to determine the least intrusive locations to sample in, while maintaining the integrity of the sampling plan.

NWest carries \$5 million Liability, \$5 million Pollution Liability and \$5 million Errors and Omissions Insurance.

Our WorkSafeBC number is 436736.

We hope this information is helpful to you and we look forward to working with you.

Yours truly,



Project Manager



North West
Environmental Group Ltd.



**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1
Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Bulk Sample Report

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett Wheelhouse Wire Testing 2018-01-22

Date: January 24, 2018
Client Job or PO#: NEED
Project number: 34596

Sample No	Location	Date Analyzed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-1b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Green)	Wire Wrap - Green	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-1b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Green)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	
34596-2b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Wrap - Black	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-2b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	
34596-3b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-3b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Insulation - White	60	Chrysotile	70	Synthetic	30	
34596-4b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-4b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Insulation - White	60	Chrysotile	70	Synthetic	30	
34596-5b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Wrap - Dark Grey	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-5b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 - Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

The report shall not be reproduced except in full without written approval of NWest. The report must not be used by the customer to claim product certification, approval, or endorsement by AIHA, EPA, NWest or its employees.



Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-6b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Wrap - Red	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-6b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	
34596-7b Layer 1	Stbd Bridge Wing Console	Jan-24-2018	JD	Wire (White)	Wire Wrap - White	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-7b Layer 2	Stbd Bridge Wing Console	Jan-24-2018	JD	Wire (White)	Wire Insulation - Black	60	None Detected	0	Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

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**North West
Environmental Group Ltd.**

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett Laundry Room Insp and Clearances

Date: January 30, 2018

Client Job or PO#: NEED

Project number: 34659

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	V/vv	LOQ	Comment
34659-1a	Jan-30-2018	Jan-30-2018	(AC1) Sink	AC	JD	15.45	08:35	11:35	180	2.0	100	2781	2.55	<0.01	VV	<	
34659-2a	Jan-30-2018	Jan-30-2018	(AC2) Entrance	AC	JD	15.45	08:35	11:35	180	5.0	100	2781	6.37	<0.01	VV	<	
34659-3a	Jan-30-2018	Jan-30-2018	(QC) Process Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34659-4a	Jan-30-2018	Jan-30-2018	(QC) Batch Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

1/2

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

WV - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibres/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



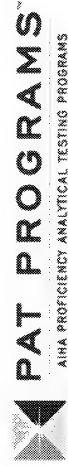
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust
Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6435039
Client No.: 34659-1b

Location: Laundry Behind Washer
Area (cm²): 100
Density (s/mm²): 61.5

Concentration (s/cm²): 14800
Asbestos Type(s): Chrysotile Amosite

Lab No.: 6435040
Client No.: 34659-2b

Location: (QC) Process Blank
Area (cm²): Blank
Density (s/mm²): <7.69

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Lab No.: 6435041
Client No.: 34659-3b

Location: (QC) Batch Blank
Area (cm²): Blank
Density (s/mm²): <7.69

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature: _____

Analyst: _____

Approved By: _____

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld, III".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 2:54:39

Page 1 of 3

001317



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And Clearances
Project No.: 34659

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

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Clearances
Project No.: 34659

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

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201 - 415 Gorge Road East
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Report Date: 1/31/2018
Report No.: 556407 - TEM Dust
Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435039
Client No.: 34659-1b

Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 1850

Area Sampled (cm²): 100
Location: Laundry Behind Washer

Asbestos Structures: 8

Structures < 5 Microns: 7
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 61.5
Structure Concentration (s/cm²): 14800
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: 1

Structure Density (s/mm²): 7.69
Structure Concentration (s/cm²): 1850
Non-Asbestos Type(s):
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID: 12:42:33PM

Lab No.: 6435040
Client No.: 34659-2b

Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Area Sampled (cm²): Blank
Location: (QC) Process Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018
Date Analyzed: 01/31/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 1/31/2018 2:54:39

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Report Date: 1/31/2018
Report No.: 556407 - TEM Dust
Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435041
Client No.: 34659-3b

Area Sampled (cm²): Blank
Location: (QC) Batch Blank

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 2:54:39

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Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556407 - TEM Dust Wipe
Project: CCGS Bartlett Laundry Room Insp And
Clearances
Project No.: 34659

Client: NOR765

Prepared for: Canadian Coast Guard Services

2018

CCGS BARTLETT

**Limited Hazardous Materials
Risk Assessment and Safe Work Procedures:
2018 Dust Cleanup: Various Compartments**

Project: 34699 RA1 V1.0
Issue date: February 2, 2018



**North West
Environmental Group Ltd.**

201 – 415 Gorge Road East
Victoria, BC
V8T 2W1

2018 Dust Cleanup: Various Compartments

FOR REVIEW**Contents**

1	Background and Scope of Work.....	1
1.1	Wheelhouse and Consoles.....	2
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1.3	Void Space Under Wheelhouse.....	4
1.4	MCR Console.....	5
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34699 RA1 V0.C - CCGS Bartlett Dust Abatement

1 Background and Scope of Work

North West Environmental Group Ltd. (NWEst) was retained by the Canadian Coast Guard (CCG, the Client) to conduct a limited hazardous materials assessment (LHMA) in accordance with WorkSafeBC regulatory requirements outlined in the BC Occupational Health and Safety (OHS) Regulation Section 20.112 – Hazardous Materials. The LHMA was conducted by NWEst representative Jen Taptuna on January 26, 2018.

Various areas were found to have asbestos-containing cables. The presence of these cables triggered an assessment of latent dust in Wheelhouse console casings. Concurrently, damage to an asbestos-containing bulkhead panel was identified by CCG crew in the Laundry Room. An abatement contractor cleaned the Laundry Room in all accessible areas, excluding behind the washers and dryers due to inaccessibility at the time. As assessment of the dust in these two areas identified the presence of asbestos fibres in excess of expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (iATL).

The scope of work was provided as follows in the request for quote with additional details provided to the attending technician at the time of this assessment.

Asbestos in latent dust in the Laundry room fell in the moderate range ($>10,000$ to $100,000$ structures per square centimetre (s/cm^2), warranting additional cleaning efforts behind the washers and dryers. Asbestos in latent dust in the Wheelhouse consoles fell in the high range ($>100,000$ s/cm^2). It is suspected that the asbestos is a result of pulling asbestos-containing cabling throughout the years.

Note that there is no accepted, standardized method of determining the mobility of asbestos fibres from latent dust into the air. The rate of mobility is dependent on various factors. The main factor for mobility on the vessel is vibration and movement during normal at-sea operations, therefore, it has been deemed prudent to remove all loosely adhered and safe to access dust from these areas.

Bulk sampling was undertaken of stored gasket materials in the Machinery Control Room Stores (MCR Stores). Chrysotile asbestos was identified in rope gasket/packing materials. These materials have been stored exposed in the MCR Stores for an unknown length of time.

The following document presents a risk assessment and provides safe work procedures for removing asbestos-containing dust from the following locations:

1. Wheelhouse and consoles.
2. Laundry Room, specifically behind the washers and dryers.
3. Void space beneath the Wheelhouse.
4. MCR console.
5. MCR stores.

Risk assessments and general procedures are based on our understanding of the scope of work and the methods and means intended to be used by the Abatement Contractor. Should the work activity type differ from what is noted herein, a new risk assessment may be required for that activity.



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FOR REVIEW

2018 Dust Cleanup: Various Compartments

1.1 Wheelhouse and Consoles

Scope of Work

- Remove loosely adhered dust from all surfaces within all consoles.
- Clean all surfaces in the Wheelhouse.
- *Hazards:* Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

1. *Moderate* risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at all Wheelhouse entrances. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- HEPA vacuum and bag curtains and other removable porous materials that will be reused. These items will be laundered prior to reuse.
- 6-mil poly drop sheet around console access to prevent entrainment of dust into the carpet.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within consoles. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum and wipe all surfaces within the Wheelhouse to remove loosely adhered latent dust. Binders/books: only HEPA vacuum the outer surfaces. CAUTION: take care not to change any settings on the control panels.
- HEPA vacuum the carpet using a carpet head attachment.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



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2018 Dust Cleanup: Various Compartments **FOR REVIEW**

1.2 Laundry Room

Scope of Work

- Remove loosely adhered dust from all surfaces behind the washers and dryers.
- Clean all surfaces in the Laundry Room.
- **Hazards:** Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed.

Contractor Requirements

Remove loosely adhered dust from behind washers and dryers and clean all Laundry Room surfaces

2. *Moderate* risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the Laundry Room entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- A pop-up or small enclosure may be constructed in the Alleyway outside the Laundry Room to create more work space. If used, it must not impede worker access through the Alleyway. **Coordinate** with CCG crew.
- Dismount the washers and dryers to access the space behind them.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces on the back sides of the units and the bulkhead and deck behind. Damp wipe non-porous surfaces. **DO NOT DAMP WIPE CABLES.** Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- NWest will conduct an inspection at this time, prior to re-installation of the units.
- Upon successful inspection, reinstall units.
- HEPA vacuum exposed surfaces of the Laundry Room (i.e. do not open millwork to clean surfaces inside as these were cleaned previously).
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake a final inspection and air clearance sampling.



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FOR REVIEW

2018 Dust Cleanup: Various Compartments

1.3 Void Space Under Wheelhouse**Scope of Work**

- Remove loosely adhered dust from all surfaces.
- Remove all dust and debris from deck.
- **Hazards:** Asbestos-containing dust. Vitreous fibres from exposed Fibreglass-type insulation. Red primer assumed to contain lead. Enclosed space with a single entrance/exit.

Contractor Requirements

Remove loosely adhered dust from all surfaces.

3. Moderate risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance to the void space. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Install a certified negative air unit (NAU) to draw air out of the space. Place it in such a manner as it does not impede regular or emergency access/egress of the space. The intent is to pull makeup air into all areas of the space, therefore, the extraction duct or NAU should be placed as far from the entrance as practicable to avoid short circuiting.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces in the space. Damp wipe non-porous surfaces. **DO NOT DAMP WIPE CABLES.** Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- Work should start from the entrance and move into the space to reduce the amount of contamination that accumulates on worker's coveralls.
- Note: additional effort may be required to remove all dust from high contact surfaces such as the deck (i.e. remove all dust, not just loosely adhered material).
- Due to the small volume of the work area and anticipated increased concentration of fibres rendered airborne during cleaning activities, workers must utilize **powered air purifying respirators (PAPRs)** equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



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FOR REVIEW

2018 Dust Cleanup: Various Compartments

1.4 MCR Console

Scope of Work

- Remove loosely adhered dust from all surfaces within the console.
- Remove loosely adhered dust from the deck behind the console and from cables running out of the console, up to the first cable tray bracket.
- *Hazards:* Asbestos-containing dust, bulkhead panels, and flooring products. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

4. *Moderate* risk cleanup activities

- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- 6-mil poly drop sheet around console access.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within and behind console. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum the deck around console openings.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.5 MCR Stores

Scope of Work

- Remove box containing asbestos rope gaskets/packing. Remove any visually similar materials, after confirming with CCG these additional materials can be disposed.
- Clean the shelving unit and adjacent surfaces within three feet.



North West
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- *Hazards:* Asbestos-containing dust, bulkhead panels, and flooring products. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

5. Moderate risk cleanup activities

- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Remove identified bulk materials and place in 6 mil poly bags. Dispose as asbestos waste.
- Remove from the shelving unit each piece of equipment or material to be kept. HEPA vacuum all exterior surfaces and place in the MCR.
- When all items are removed from the shelving unit, HEPA vacuum and damp wipe the shelving unit.
- HEPA vacuum and damp wipe all surfaces behind and adjacent to the shelving unit.
- NWest will undertake an inspection for cleanliness at this time.
- Upon successful inspection, items can be replaced.
- HEPA vacuum the deck.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.6 Additional Requirements

- If suspect materials are discovered during abatement activities that have not been included in this risk assessment, work must stop and the material assessed by a qualified person.
- Submit Notice of Project complete with site specific work procedures to WorkSafeBC no less than 48 hours prior to commencing work
- All HEPA vacuums and NAUs must be certified (DOP/PAO tested) within 12 months of use. Recommend on-site certification to ensure units are functioning properly after transport.



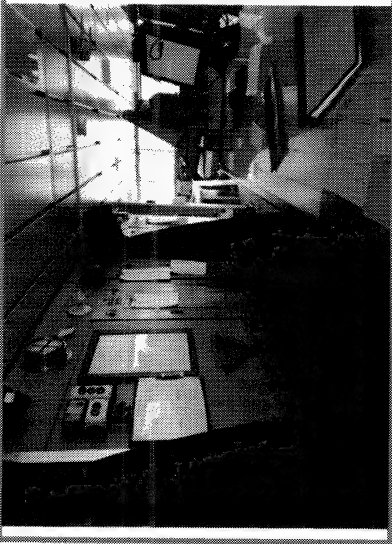

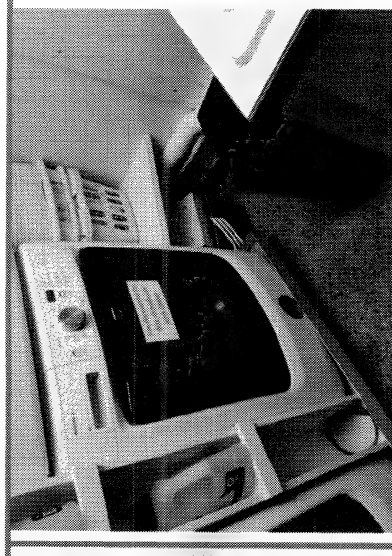
North West
Environmental Group Ltd.

FOR REVIEW

- Provide occupational health and safety program including exposure control plans for asbestos, lead, vitreous fibres, and silica as well as procedures for de-energization and lockout if required.
- Provide all first aid for contractor workers.
- Other personal protective equipment (PPE) such as safety eyewear, hard hats, or face protection may be required. Site conditions may necessitate the use of alternative respirator cartridges (e.g. nearby welding, chemical applications, or vehicle exhaust). For the purposes of handling the above identified hazardous materials, all cartridges must utilize P-100 particulate filters, at minimum.
- No wet wiping, wire brushing, or application of liquids to electrical cabling.
- Contractor shall coordinate schedule around the crew's schedule including fueling events, maintenance, practice drills and any other reasonably foreseeable activity. Contractor is responsible for coordination with Chief Engineer and Chief Steward.
- All air sampling to be conducted by NWest.



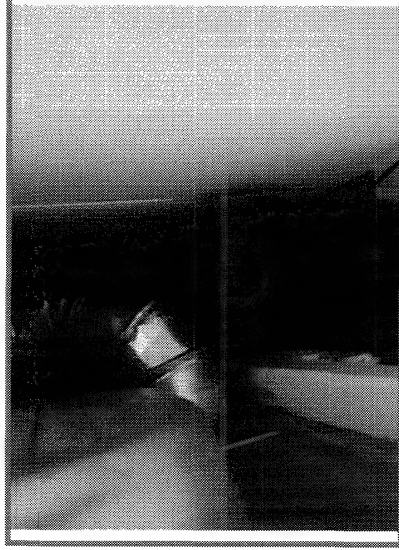

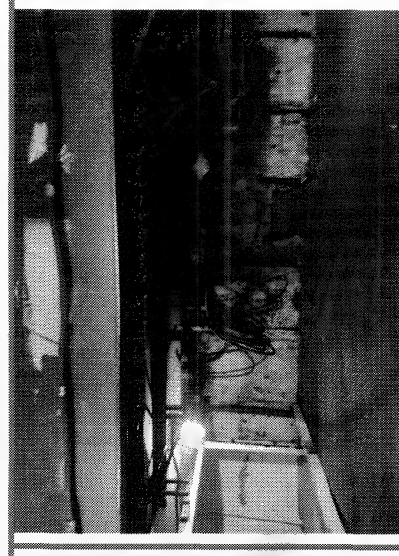
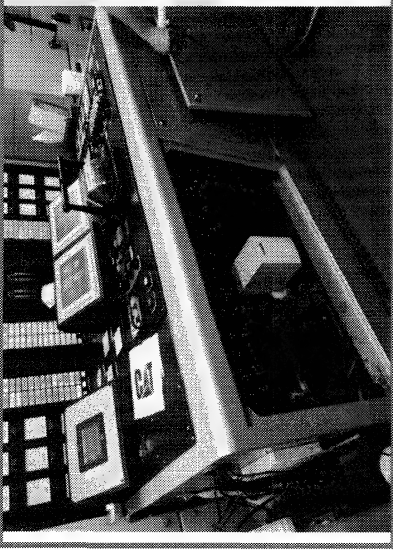
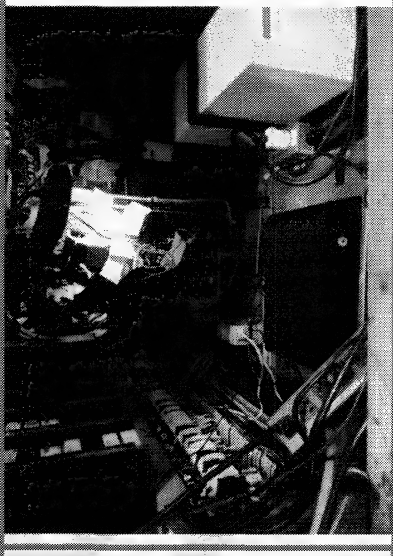
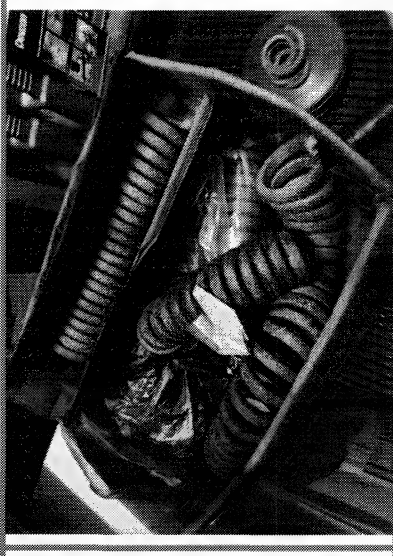
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Environmental Group Ltd.

		
<p>Unit/Location: Wheelhouse</p> <p>Description: Overview</p> <p>Comments: Curtains and other porous items meant for reuse will be HEPA vacuumed, bagged, and laundered. HEPA vacuum and wipe all surfaces.</p>	<p>Unit/Location: Wheelhouse console</p> <p>Description: Overview of typical console</p> <p>Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.</p>	<p>Unit/Location: Laundry Room</p> <p>Description: Overview</p> <p>Comments: Units are framed into place.</p>



North West
Environmental Group Ltd.

FOR REVIEW

	<p>Unit/Location: Laundry Room</p> <p>Description: Dust behind washers and dryers to be cleaned.</p> <p>Comments: Remove units and clean back sides of units and the bulkhead and deck.</p>		<p>Unit/Location: Void Space Under Wheelhouse</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum and wipe to remove loosely adhered dust.</p>		<p>Unit/Location: Void Space Under Wheelhouse</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum and wipe to remove loosely adhered dust. Fibreglass-type insulation present.</p>		<p>Unit/Location: MCR</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.</p>		<p>Unit/Location: MCR</p> <p>Description: Overview</p> <p>Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.</p>		<p>Unit/Location: MCR Stores</p> <p>Description: Asbestos-containing rope gaskets/packing stored exposed.</p> <p>Comments: Dispose of ACM, clean shelving and adjacent surfaces within 2 feet.</p>
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North West
Environmental Group Ltd.

CCGS BARTLETT

Limited Hazardous Materials Risk Assessment & Safe Work Procedures

February 2, 2018

2018 Dust Cleanup: Various Compartments FOR REVIEW**3 Validation**

All work undertaken was conducted according to standardized methods and otherwise in accordance with protocols and procedures currently utilized by occupational hygiene professionals operating in this jurisdiction. No assessment was requested or made of other potential areas of asbestos or lead contamination that may or may not be present within the vessel.

Project Manager
Report author

Signature on file

Senior Project Manager
Qualified Person as per OHS Reg 6.1
Report review



North West
Environmental Group Ltd.





North West
Environmental Group Ltd.

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Bulk Sample Report

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

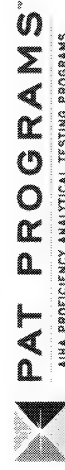
Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Background Testing

Date: February 01, 2018

Client Job or PO#: NEED

Project number: 34694

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34694-1b	MCR Stores	Feb-01-2018	JD	Rope Gasket (~1.5cm)	White / Grey	100	Chrysotile	30	Synthetic (50%) Non-Fibrous (20%)	70	
34694-2b	Engine Room	Feb-01-2018	BR	Wiring - Black, ~1cm	White / Black	100	Chrysotile	30	Cellulose (30%) Synthetic (10%) Non-Fibrous (30%)	70	



AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos
Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6435034 Client No.: 34651-6b	Location: WH Fire Panel Console FWD Area (cm²): 100 Density (s/mm²): 1260	Concentration (s/cm²): 6040000 Asbestos Type(s): Chrysotile Amosite Anthophyllite
<hr/>		
Lab No.: 6435035 Client No.: 34651-7b	Location: WH Fire Panel Console AFT Area (cm²): 100 Density (s/mm²): 1040	Concentration (s/cm²): 9990000 Asbestos Type(s): Chrysotile Amosite
<hr/>		
Lab No.: 6435036 Client No.: 34651-8b	Location: WH FWD Stbd Console Area (cm²): 100 Density (s/mm²): 76.9	Concentration (s/cm²): 370000 Asbestos Type(s): Chrysotile
<hr/>		
Lab No.: 6435037 Client No.: 34651-9b	Location: WH Batch Blank Area (cm²): Blank Density (s/mm²): <7.69	Concentration (s/cm²): NA Asbestos Type(s): None Detected
<hr/>		
Lab No.: 6435038 Client No.: 34651-10b	Location: WH Process Blank Area (cm²): Blank Density (s/mm²): 7.69	Concentration (s/cm²): NA Asbestos Type(s): Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Date Analyzed: 01/31/2018

Signature: _____

Analyst: _____

Approved By: _____

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 5:48:16

Page 1 of 3



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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console
Asbestos Testing
Project No.: 34651

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 1/31/2018 5:48:16

Page 2 of 3

001338

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console
Asbestos Testing
Project No.: 34651

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements (<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos
Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435034
Client No.: 34651-6b

Area Sampled (cm²): 100
Location: WH Fire Panel Console FWD

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 0.1
Dilution Factor (mL): 50
Grid Openings: 3
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0390
Sensitivity (s/mm²): 25.6
Detection Limit (s/cm²): 123000

Asbestos Structures: 49
Structures < 5 Microns: 44
Structures ≥ 5 µm: 5
Structure Density (s/mm²): 1260
Structure Concentration (s/cm²): 6040000
Asbestos Type(s):
Chrysotile
Amosite
Anthophyllite

Structure Density (s/mm²): <25.6
Structure Concentration (s/cm²): <123000
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6435035
Client No.: 34651-7b

Area Sampled (cm²): 100
Location: WH Fire Panel Console AFT

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 0.05
Dilution Factor (mL): 50
Grid Openings: 2
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0260
Sensitivity (s/mm²): 38.5
Detection Limit (s/cm²): 370000

Asbestos Structures: 27
Structures < 5 Microns: 22
Structures ≥ 5 µm: 5
Structure Density (s/mm²): 1040
Structure Concentration (s/cm²): 9990000
Asbestos Type(s):
Chrysotile
Amosite

Structure Density (s/mm²): <38.5
Structure Concentration (s/cm²): <370000
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018

Approved By:

Date Analyzed: 01/31/2018

Signature:

Analyst:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 1/31/2018 5:48:16

Page 1 of 4



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos
Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435036
Client No.: 34651-8b

Volume Filtered (mL): 0.1
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 92500

Area Sampled (cm²): 100
Location: WH FWD Stbd Console

Asbestos Structures: 4
Structures < 5 Microns: 2
Structures ≥ 5 µm: 2
Structure Density (s/mm²): 76.9
Structure Concentration (s/cm²): 370000
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <92500
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6435037
Client No.: 34651-9b

Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Area Sampled (cm²): Blank
Location: WH Batch Blank

Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018
Date Analyzed: 01/31/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 1/31/2018 5:48:16



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Rev #5, 1/31/2018
Wipe
Project: CCGS Bartlett Wheelhouse Console Asbestos
Testing
Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435038
Client No.: 34651-10b

Area Sampled (cm²): Blank
Location: WH Process Blank

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 7
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
Amosite

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 1/31/2018
Date Analyzed: 01/31/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature: _____
Analyst: _____

Dated : 1/31/2018 5:48:16

Page 3 of 4

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018
Report No.: 556406 - TEM Dust Wipe
Project: CCGS Bartlett Wheelhouse Console
Asbestos Testing
Project No.: 34651

Ayres, Bob

From: Ayres, Bob
Sent: Thursday, June 21, 2018 6:36 AM
To: 'Krawciw, Don (HC/SC)'
Subject: FW: Bartlett Background Testing Update Feb 3
Attachments: 34694 AA2 V1.0 2018-02-02 - CCGS Bartlett Background Testing.pdf

Hello Don,

Last night I received more of the air sampling results. I will forward several emails with attachments and related discussions that should provide more context for yourself and the hygienists.

Regarding the potential meeting today, I checked again with Fleet and they would very much prefer this week as some crew have continued to express concerns and next week there is scheduled asbestos training for many of the crew so they may not be available. Regarding the Friday option, if today does not work Russell advised he could be back at base by 1330 so that would be an option after all. Please advise when you can and we'll let Fleet know – they are looking forward to the chance to ask questions.

Regarding our safety bulletin I understand the reluctance your people would have based on limited information. An option for us may be to revise the wording so we are not stating a HC assessment of risk, but rather our assessment based on evidence so far. We feel it important to get the bulletin out sooner rather than later.

Best regards,
Bob

From: Chaikin, Gabriel
Sent: Wednesday, June 20, 2018 8:32 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: FW: Bartlett Background Testing Update Feb 3

Bob,

This is the initial air testing conducted alongside on February 3rd of this year.

Regards,

Gabe

From: CCGS-NGCC, Bartlett Chief Engineer [BartlettCE@ccgs-ngcc.gc.ca]
Sent: February 3, 2018 5:05 PM
To: McMillan, Cody; Chaikin, Gabriel
Subject: FW: Bartlett Background Testing Update Feb 3

Hi Cody/Gabe,

Good initial results on the air quality and indication that the asbestos fibres are not airborne.

I have spoken with [REDACTED] regarding the extra sampling work over the weekend requiring a separate proposal and we will be paying on a separate bill. We will finalize it early next week.

Regards

Matt Jackson
Chief Engineer
CCGS Bartlett
Cell: [REDACTED]
BartlettCE@ccgs-ngcc.gc.ca

From: [REDACTED]
Sent: February-03-18 1:50 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: Grant Rogers; Joel Shandro; Kyle Ostman
Subject: Bartlett Background Testing Update Feb 3

Hi Matt, following is an update to our proposal for background testing on the Bartlett.

Preliminary air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected in 10 locations throughout the vessel on February 2, 2018 while the vessel was docked alongside, occupied and with systems (e.g. heating and ventilation) operational. All air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). WorkSafeBC has determined the exposure limit for asbestos fibres to be 0.1 fib/ml for an 8 hour day, however, as personnel are on the ship for 24 hours, this is adjusted to 1/10th of that amount, or 0.01 fib/ml (BCOHS 5.50 Extended work periods).

While initial results are encouraging (in that all were reported to be <0.01 fib/ml), the limit of quantitation (LOQ) of the method is not satisfied until enough fiber loading is achieved (100-1300 fib/mm²). In other words, additional ambient air sampling with sampling times of approximately 10 hours at 2.5 LPM is recommended, although if the atmosphere is sufficiently low in fibers this fiber loading may still be unachievable. However, due to the potential concern and questions likely to be raised by affected parties we recommend that we take longer ambient samples to be prudent. We are undertaking this follow up testing today (Feb 3).

The ambient air sampling will result in additional costs as we had not included overtime rates in our original proposal. We will honour the lower air sample analysis cost of [REDACTED] for additional samples required due to site conditions. I estimate today's sampling will add approximately \$3450 to the original proposal of \$7712 with an estimated total of \$11,162, excluding GST.

Results from Feb 2 Air Testing

All fibre concentrations for samples collected on Feb 2 were below the limit of detection (0.01 fib/ml). Lab report attached.

Other Updates

Wipe samples collected Feb 2 will be delivered to the courier today for Monday arrival at the laboratory. We anticipate results by end of day Tuesday. I had been told there was weekend pickup, but it looks like that was incorrect. I will keep you apprised of any changes.

Please let me know if you have any questions.

Best,



[REDACTED]
Project Manager
North West Environmental Group Ltd.
C. [REDACTED]

P. 250-384-9695 ext. [REDACTED] | F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC , V8T 2W1

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**North West
Environmental Group Ltd.**

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1
Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett: Background Testing

Date: February 02, 2018

Client Job or PO#: NEED

Project number: 34694

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/v	LOQ	Comment
34694-3a	Feb-02-2018	Feb-02-2018	(AMB) Control Room	AMB	JD	2.04	12:05	14:12	127	0.5	100	259.08	0.64	<0.01	W	<	
34694-4a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley Aft	AMB	JD	5.12	11:33	14:46	193	4.0	100	988.16	5.10	<0.01	W	<	
34694-5a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Alley FWD	AMB	JD	5.12	11:42	14:47	185	3.0	100	947.2	3.82	<0.01	W	<	
34694-6a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Oilers Aft Cabin	AMB	JD	2.04	11:22	14:01	159	2.0	100	324.36	2.55	<0.01	W	<	
34694-7a	Feb-02-2018	Feb-02-2018	(AMB) Upper Deck Winchman's Cabin	AMB	JD	2.61	11:19	13:58	159	3.0	100	414.99	3.82	<0.01	W	<	
34694-8a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Alley	AMB	JD	5.1	11:07	16:44	337	2.5	100	1718.7	3.18	<0.01	W	<	
34694-9a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Logistic Officer's Cabin	AMB	JD	2.5	10:59	13:56	177	3.5	100	442.5	4.46	<0.01	W	<	
34694-10a	Feb-02-2018	Feb-02-2018	(AMB) Poop Deck Lounge	AMB	JD	2.8	10:55	13:47	172	3.5	100	481.6	4.46	<0.01	W	<	
34694-11a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Alley	AMB	JD	5.12	11:54	16:58	304	1.5	100	1556.48	1.91	<0.01	W	<	
34694-12a	Feb-02-2018	Feb-02-2018	(AMB) Boat Deck Chief Officer's Cabin	AMB	JD	2.36	11:47	14:19	152	5.5	100	358.72	7.01	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
34694-13a	Feb-02-2018	Feb-02-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
34694-23a	Feb-02-2018	Feb-02-2018	(AC) Poop Deck Lounge	AC	JD	13.56	14:27	16:55	148	6.5	100	2006.88	8.28	<0.01	V	<	

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

2/2

McNish, Joanne

From: McNish, Joanne
Sent: Thursday, June 21, 2018 1:36 PM
To: Ayres, Bob; Jersch, Russell; 'Krawciw, Don (HC/SC)'
Cc: Ormiston, Glenn
Subject: Re: Draft Regional Safety Bulletin - Asbestos, Lead Paint

Bob,

This version is very comprehensive and covers all areas that have been brought to my attention. Thanks to all who provided input.

There is one missed word on last page:
work is not to be commenced until an

Glenn,

Please reach out personally to Burt, Guild (Trevor) and Barry Tchir should be included, from Regional perspective.

Bob, Thank you for leading this.
Joanne

Sent by BB

From: Ayres, Bob
Sent: Thursday, June 21, 2018 12:57 PM
To: McNish, Joanne; Jersch, Russell; 'Krawciw, Don (HC/SC)'
Cc: Ormiston, Glenn
Subject: Draft Regional Safety Bulletin - Asbestos, Lead Paint

FYI,

I spoke with Dr. Krawciw this morning and given the delay in word from the hygienists in Ottawa we agreed that I would revise the wording in the bulletin.

I have thus revised the wording in the bulletin, in particular the first two full paragraphs on page 2. Have included additional detail as to the sampling undertaken in 1st paragraph and changed wording to indicate that the work to date and review with HC and consultants has provided CCG with confidence that risk is low. We also state that this work and monitoring will continue on an ongoing basis.

DFO OHS has confirmed that they will be the receiver of any entries into the exposure registry (as WorksafeBC mails a copy to the employer).

I shared the draft with the AC's office yesterday, as it is to go out noted as approved by – should be no trouble with the revision.

I advised Dena in HQ that I'd send a copy for their information once it goes out. Dena also mentioned would be good to share with union.

If you have a chance to review and comment please do. Russell I'll touch base with you and if you agree we can look to have the AC's office send to all by end of day?

Thanks all,
Bob

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-21-18 6:19 PM
To: CCGS-NGCC, Bartlett Logistics Officer
Subject: FW: Bartlett - Results
Attachments: COA_566181.pdf; 35254 AA14 V1.0 2018-06-21 - CCGS Bartlett S#1-62.pdf

Dearest Cam,

Captain asked me to send you most recent asbestos reports. File 35254 is air samples from 31 May thru to 21 June inclusive. The COA file is results of wipe samples taken 18 Jun 2018.

Respectfully,

Scott Ware,
 Relief Chief Engineer,
 CCGS Bartlett, Red
 Cell: [REDACTED] or
 Cell: [REDACTED]

BartlettCE@bar.ccs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: June-21-18 3:24 PM
To: Chaikin Gabriel; Jeremy Robinson; CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED]
Subject: Bartlett - Results

Good afternoon, please find attached:

1. Wipe samples from the Wheelhouse – all within expected ambient range OR below the limit of detection.
2. Air clearance results for the Stack – below threshold. NOTE: we've updated samples 51-54 to include the compartment name.

Please let me know if you have any questions.

Best,

Project Manager
North West Environmental Group Ltd.



#201 – 415 Gorge Road East
 Victoria, B.C. V8T 2W1

C: [REDACTED]
O: (250) 384-9695 ext. [REDACTED]

The information contained in this email message is privileged and confidential information intended only for the use of the party named above. If you have received this communication in error, please notify the author and delete the message from your system. Your cooperation is appreciated.



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6536374
Client No.: 35254-83b

Location: Wheelhouse-Fwd Port Window Sill
Area (cm²): 100
Density (s/mm²): <19.2

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.: 6536375
Client No.: 35254-84b

Location: Wheelhouse-Mid Stbd Top Of
Console
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 925
Asbestos Type(s): Chrysotile

Lab No.: 6536376
Client No.: 35254-85b

Location: Wheelhouse-Mid Stbd Inside Console
Area (cm²): 100
Density (s/mm²): <15.4

Concentration (s/cm²): <925
Asbestos Type(s): None Detected

Lab No.: 6536377
Client No.: 35254-86b

Location: Wheelhouse-Fwd Stbd Inside Console
Area (cm²): 100
Density (s/mm²): 19.2

Concentration (s/cm²): 1850
Asbestos Type(s): Chrysotile

Lab No.: 6536378
Client No.: 35254-87b

Location: Field Blank
Area (cm²): Blank
Density (s/mm²): <15.4

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018

Date Analyzed: 06/19/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/19/2018 11:01:40

Page 1 of 3

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9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/19/2018 11:01:40

Page 2 of 3

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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements. (<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536374
Client No.: 35254-83b
Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Fwd Port Window Sill
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): ≤19.2
Structure Concentration (s/cm²): ≤925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6536375
Client No.: 35254-84b

Volume Filtered (mL): 10
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Mid Stbd Top Of Console
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 925
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018

Date Analyzed: 06/19/2018

Signature:
Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated: 6/19/2018 11:01:41

Page 1 of 4

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536376
Client No.: 35254-85b
Volume Filtered (mL): 8
Dilution Factor (mL): 50
Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Mid Stbd Inside Console
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): <925
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): <925
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6536377
Client No.: 35254-86b
Volume Filtered (mL): 5
Dilution Factor (mL): 50
Grid Openings: 8
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.104
Sensitivity (s/mm²): 9.62
Detection Limit (s/cm²): 925

Area Sampled (cm²): 100
Location: Wheelhouse-Fwd Stbd Inside Console
Asbestos Structures: 2
Structures < 5 Microns: 1
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 1850
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 1
Structure Density (s/mm²): 9.62
Structure Concentration (s/cm²): 925
Non-Asbestos Type(s):
SiAl - Other Fiber

Micrograph Number:
EDXA Spectrum ID:

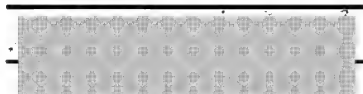
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/19/2018 11:01:41

Page 2 of 4

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9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536378
Client No.: 35254-87b

Area Sampled (cm²): Blank
Location: Field Blank

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 5
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0650
Sensitivity (s/mm²): 15.4
Detection Limit (s/cm²): NA

Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): ≤15.4
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Structure Density (s/mm²): <15.4
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

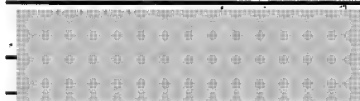
Date Received: 6/18/2018
Date Analyzed: 06/19/2018

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/19/2018 11:01:41



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018
Report No.: 566181 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSCB Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vw	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	W	<	Twek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	W	<	Twek, PAPR, Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	W	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

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s.19(1)

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospital	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	W	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	W	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	W	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	W	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Art Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Art Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	W	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	W	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Top Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	W	<	Level / PAPR

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	W	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	W	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	W	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	W	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	W	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.


QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.


WV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

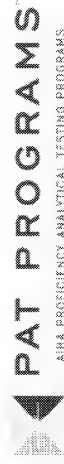
Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

 Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

 Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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North West
Environmental Group Ltd.

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
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Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

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A HA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	VV	<	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	VV	<	Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	VV	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VV	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VV	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VV	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VV	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	VV	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	VV	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Steve / Top Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	VV	<	Dennis / 4th Level / PAPR

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LAB# 202314

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	VV	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	VV	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	VV	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	VV	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	VV	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

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LAB# 202314

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AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

5/5



North West
Environmental Group Ltd.

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-99b	Boson Stores - Beneath Perforated Metal Panels	Jun-21-2018	JD	Deckhead/Bulkhead Insulation	Pink	100	None Detected	0	Glass	100	
35254-100b	Boson Stores - Beneath Perforated Metal Panels	Jun-21-2018	JD	Deckhead/Bulkhead Insulation	Yellow	100	None Detected	0	Glass	100	
35254-101b	Boson Stores - Beneath Perforated Metal Panels	Jun-21-2018	JD	Deckhead/Bulkhead Insulation	Pink	100	None Detected	0	Glass	100	

PAT PROGRAMS
A IIA PROFICIENCY ANALYTICAL TESTING PROGRAMS
LAB# 202314

Ayres, Bob

From: Jacquard, Mary on behalf of Girouard, Roger
Sent: Friday, June 22, 2018 7:53 AM
To: XPAC CCG All
Subject: Regional Safety Bulletin
Attachments: Western Region Safety Bulletin - Asbestos and Lead Paint June 21.pdf

On behalf of the A/AC Kevin Carrigan and the AC Roger Girouard, please find attached a Regional Safety Bulletin that speaks to the issue of Hazardous Materials, Asbestos and Lead Paint in our workplaces.

Recent findings on the CCGS Bartlett have resulted in increased awareness for both Fleet and Shore-Based employees as to the presence of asbestos containing materials and lead paint in older ships and structures.

The purpose of this bulletin is to inform employees of the potential of these hazardous materials in many of our workplaces, identify the risks and mitigation measures, provide information, identify appropriate controls and to outline options for documentation of potential exposure.

If any questions as to the issues raised in this bulletin please feel free to speak with your supervisor or to contact Coast Guard Safety and Security, as per the bulletin.

**Pages 1371 to / à 1374
are duplicates of
sont des duplicatas des
pages 1548 to / à 1551**

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Logistics Officer
Sent: June-22-18 3:26 PM
To: CCGS-NGCC, Bartlett Captain
Subject: FW: Laundry of curtains on bartlett

Capt.

Update

CAM DEAN

Supply Officer
CCGS Bartlett
25 Huron Street
Victoria, BC V8V 4V9
Shoreline 250-480-2691 or 2692
Cell – [REDACTED]

From: Canadian HAZ-MAT Environmental Ltd [mailto:info@haz-mat.ca]
Sent: June-22-18 12:58 PM
To: CCGS-NGCC, Bartlett Logistics Officer
Subject: Re: Laundry of curtains on bartlett

Update FYI: I spoke with [REDACTED] at Vancouver Island Linen, they are equipped and experienced at handling asbestos contaminated laundry. They just need to receive it in sealed bags, with hooks removed (they use moderate risk procedures to handle it. It would need to be HEPA vacuumed first as per regs

Certified® Asbestos Building Inspector (AHRA)

Canadian HAZ-MAT Environmental
250 891 8611
info@haz-mat.ca
1111 Tulip Ave
Victoria, BC
V8Z7Z2
www.haz-mat.ca



On Fri, Jun 22, 2018 at 12:19 PM, CCGS-NGCC, Bartlett Logistics Officer <BartlettLO@ccgs-ngcc.gc.ca> wrote:

Hi Dave,

Average cost for [REDACTED] bags Laundry (Linens) is between \$400 to [REDACTED].

Our supplier for this service is **Vancouver Island Linen**.

Regards.

CAM DEAN

Supply Officer

CCGS Bartlett

25 Huron Street

Victoria, BC V8V 4V9

Shoreline 250-480-2691 or 2692

Cell – [REDACTED]

From: Canadian HAZ-MAT Environmental Ltd [mailto:info@haz-mat.ca]

Sent: June-22-18 11:58 AM

To: CCGS-NGCC, Bartlett Logistics Officer

Subject: Fwd: Laundry of curtains on bartlett

Hello Cam,

I didn't see your email address on this list, so i am forwarding [REDACTED] message.

Questions,

Can you remind me what the usual cost is for laundry of non asbestos containing materials, also which supplier do you usually use.

I hope to have a solution roughly in place by later today, or atleast be able to provide pricing.

Certified® Asbestos Building Inspector (AHERA)

Canadian HAZ-MAT Environmental

250 891 8611

info@haz-mat.ca

1111 Tulip Ave

Victoria, BC

V8Z7Z2

www.haz-mat.ca



----- Forwarded message -----

From: [REDACTED]

Date: Fri, Jun 22, 2018 at 8:12 AM

Subject: RE: Laundry of curtains on bartlett

To: Canadian HAZ-MAT Environmental Ltd <info@haz-mat.ca>

Cc: [REDACTED] "Chaikin, Gabriel
(Gabriel.Chaikin@dfo-mpo.gc.ca)" <Gabriel.Chaikin@dfo-mpo.gc.ca>, "CCGS-NGCC, Bartlett Chief
Engineer" <BartlettCE@ccgs-ngcc.gc.ca>

Hi [REDACTED] following are the relevant Regs and Guidelines. 12.158 addresses "adequate facility". If you were looking to do the laundry yourself, you'd need a SWP, which we can review on behalf of the CCG.

Volumes:

1. Curtains: 27 3'x6' door curtains and 27 3'x3' window curtains.
2. Linens (no clothing): 12 bags w/ approx. weight of 25-30 lbs each.

Personal Protective Clothing and Equipment

G6.31 Contaminated personal protective clothing - Information to laundry workers

Issued August 1, 1999

Section 6.31 of the *OHS Regulation* states:

The employer must ensure that workers who launder clothing contaminated with asbestos are informed of the hazards of asbestos and the precautions required for handling the clothing.

Under section 5.82(1)(b) of the *OHS Regulation*, the employer is responsible for laundering protective clothing contaminated with asbestos (see OHS Guideline G5.82). However, before protective clothing contaminated with asbestos can be sent to an acceptable laundry facility, the employer must, under section 6.30(5) of the *OHS Regulation*, ensure that it is cleaned with a vacuum cleaner, equipped with a HEPA-filtered exhaust, and placed in a water-soluble plastic bag. This plastic bag must be sealed and labelled. A commercial laundry or linen service would be considered an "acceptable" laundry facility if they are capable of handling contaminated laundry.

The requirements of sections 12.157 and 12.158 of the *OHS Regulation* also apply.

Section 5.82(1)(b) requires the employer to "launder or dispose of the protective clothing on a regular basis, according to the hazard." Note that the provisions of section 12.157 of the *Regulation* also apply. That is, the employer must advise the operator of the laundry or dry cleaning facility in writing of any potential hazards.

12.157 Supplier responsibility

When articles are sent for processing to a laundry or dry cleaning facility, the employer sending the articles must advise the operator of the facility, in writing, of

- (a) the identity of any materials contained with the articles which could pose a hazard to workers handling the articles,
- (b) the nature of any hazard that may arise from the materials, and
- (c) general precautionary measures to be followed when handling the materials.

12.158 Operator responsibility

If articles to be processed may contain materials such as hazardous biological or chemical contaminants, sharp objects, or other materials which would pose a hazard to workers handling the articles, the operator of a laundry or dry cleaning establishment must

- (a) determine the nature of any hazard to workers,
- (b) develop effective written safe work procedures to minimize the risk of injury and disease, and
- (c) ensure that workers are adequately instructed and directed to follow the safe work procedures.



Project Manager

North West Environmental Group Ltd.

C. [Redacted]

From: Canadian HAZ-MAT Environmental Ltd <info@haz-mat.ca>

Sent: June 19, 2018 10:36 AM

To: [Redacted]

Subject: Laundry of curtains on bartlett

Hi [Redacted]

I had a call from Cam on the bartlett about cleaning curtains. I wanted to check with you on volume of material as well as contamination level and determine suitable solution.

Can you call sometime



Certified® Asbestos Building Inspector (AHERA)

Canadian HAZ-MAT Environmental

250 891 8611

info@haz-mat.ca

1111 Tulip Ave

Victoria, BC

V8Z7Z2

www.haz-mat.ca

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: Jen Taptuna <jtaptuna@nwest.bc.ca>
Sent: June 22, 2018 12:52 PM
To: Canadian HAZ-MAT Environmental Ltd
Cc: [REDACTED] Chaikin Gabriel; CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Logistics Officer
Subject: RE: Laundry of curtains on bartlett

Not a problem. I believe CCG or the ship is hiring you directly. Any financial discussion should be directed to them.
Best,



Jen Taptuna
Project Manager
North West Environmental Group Ltd.
C. 250-580-1473 (Primary)

From: Canadian HAZ-MAT Environmental Ltd <info@haz-mat.ca>
Sent: June 22, 2018 12:40 PM
To: [REDACTED]
Cc: [REDACTED] Chaikin, Gabriel
(Gabriel.Chaikin@dfo-mpo.gc.ca) <Gabriel.Chaikin@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Logistics Officer <BartlettLO@ccgs-ngcc.gc.ca>
Subject: Re: Laundry of curtains on bartlett

Thank you [REDACTED] that really helps us provide some scope for this work. I have provided a draft estimate below for review.

We can provide 2 technicians to HEPA vacuum the materials (estimate [REDACTED] day [REDACTED]). Creating safe work procedures [REDACTED]. We would basically facilitate this work for you with an existing laundry so their charges would be additional to these costs (I should have an estimate shortly but these should not be too much different than normal). Please add an additional [REDACTED] for admin, communication with laundry, project management. These prices do not include GST.

Please don't hesitate to let me know if you have any questions or require any further information.

Sincerely,
Dave

Certified® Asbestos Building Inspector (AHERA)

Canadian HAZ-MAT Environmental
250 891 8611
info@haz-mat.ca
1111 Tulip Ave
Victoria, BC
V8Z7Z2
www.haz-mat.ca



On Fri, Jun 22, 2018 at 8:12 AM, [REDACTED] wrote:

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- (a) determine the nature of any hazard to workers,
- (b) develop effective written safe work procedures to minimize the risk of injury and disease, and
- (c) ensure that workers are adequately instructed and directed to follow the safe work procedures.



[REDACTED]
Project Manager

North West Environmental Group Ltd.

C. [REDACTED]

From: Canadian HAZ-MAT Environmental Ltd <info@haz-mat.ca>

Sent: June 19, 2018 10:36 AM

To: [REDACTED]

Subject: Laundry of curtains on bartlett

Hi [REDACTED]

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Can you call sometime


Certified® Asbestos Building Inspector (AHERA)

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Victoria, BC

V8Z7Z2

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Wheelhouse
Sent: June-25-18 10:11 AM
To: CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Engine Room
Subject: FW: Canadian Coast Guard to Acquire Three Interim Icebreakers and various updates

From: Main Ops Officer / Agent principal des Ops (DFO/MPO) [mailto:Western.Ops-Centre2@dfo-mpo.gc.ca]

Sent: June-24-18 5:53 PM

To: CCGS-NGCC, Bartlett Wheelhouse; CCGS-NGCC, CaptainGoddard WheelHouse; CCGS-NGCC Eckaloo Wheelhouse; CCGS-NGCC Eckaloo Captain; CCGS-NGCC, GordonReid Wheelhouse; CCGS-NGCC, JohnPTully Wheelhouse; CCGS-NGCC, MCharles WheelHouse; CCGS-NGCC, Neocaligus Wheelhouse; CCGS-NGCC, OtterBay Wheelhouse; CCGS Sir Wilfrid Laurier; CCGS Tanu; CCGS Vector; Dumit CO; CCGS-NGCC Eckaloo Chief Engineer; Taylor Denis; XPAC CCG All Stations; IRB509/ESC509 (DFO/MPO); IRB501; IRB507/ESC507 (DFO/MPO); IRB508/ESC508 (DFO/MPO); Webb Nathan; Wiseman Kara

Subject: Canadian Coast Guard to Acquire Three Interim Icebreakers and various updates

Commanding Officers,

Please review the following with crews, and raise any questions back to the appropriate person. Our intention is to have a conference call this month and next. Questions can also be raised then.

Yesterday, Public Services and Procurement Canada announced the following (see below).

Having interim additional icebreaking capacity will allow the Coast Guard to support the VLE programs currently underway, refits and a longer Arctic season while vessels are being replaced under the National Shipbuilding strategy. It will also allow the Coast Guard to consider other interim measures for priorities across the country.

At Victoria Shipyard, work continues on the Sir John Franklin, the replacement vessel for the WE Ricker. This was the first vessel that has been built under the National Shipbuilding Strategy. Although the delivery to Coast Guard has needed to be adjusted to later in 2018 than originally planned, we are working at finalizing crew lists, and will start crewing the vessel with core crew over the summer (Chief Engineer, Electrician, mate) and slowly add other positions throughout the fall, placing the full crew when the vessel begins its operationalization.

I would like to thank Chief Matt Jackson, Maintenance Manager Gabe Chaikin, Captain McCullagh, Chief Ross McKenzie, Captain Reid, Captain Shuckburgh, Bartlett officers, Bosuns and crew red and white, S&S Manager Bob Ayres, Marine Superintendent Russell Jersch and staff, Captain Ormiston and Captain Bennett, ME, Health Canada, and others involved for the tremendous effort of the awareness, planning, clean-up and mitigation efforts with respect to Asbestos management onboard Bartlett. An information package is being finalized to be widely distributed, and will also include information for those no longer sailing onboard. I have included some information from the bulletin.

'Asbestos refers to six naturally occurring fibrous minerals. Its desirable properties include that it greatly increases the tensile strength of materials, and is an excellent insulator against noise, heat and fire. These properties supported its use for many years in a number of different commercial and industrial settings, as well as in a wide range of consumer products. As long as asbestos is tightly bound within materials or encapsulated, it poses no significant health risk. If disturbed and reduced to a friable state such that it becomes airborne and is inhaled it may pose long-term health risks.

The CCG continues to take significant efforts at asbestos management, including regular surveys of our ships and remediation or encapsulation of ACM where appropriate. In the recent case on the CCGS Bartlett, a comprehensive regime of sampling has been undertaken to provide a broader analysis of risk. This has included bulk material samples of wiring and other potential sources, dust wipe samples throughout suspect areas and air sampling throughout the ship at various times. Samples of suspect materials confirmed the presence of asbestos in certain specific wiring and in dusts in a variety of locations. It is probable, that in some cases at least, these dusts were residual from previous remediation efforts when cleaning standards were less rigorous than today. An asbestos remediation contractor is now conducting a thorough cleaning of suspect areas and finalizing a plan to encapsulate material in the ship's stack. Importantly, air monitoring on the ship in a variety of locations, times including prior to the recent cleaning efforts, and operational states have all resulted in results either below the limit of detection or below the limit of quantitation for asbestos. Samples from the ventilation ducts also showed negative for asbestos.'

The John P Tully has just completed its VLE and successfully completed the PAPA trip. A number of people worked tirelessly to support the VLE and make that possible. A VLE starts years out, with plans, costing, detail work, and then project oversight and management, onboard work, drawing updates, SMS updates, operationalizing, and familiarization.

I would like to take an opportunity to thank the Tully Chief Engineers, Roger Horton and Ryan Braidwood for the tireless work leading up to, during and post VLE, including readying all systems for program. Jean-Luc Arsenault and Louise-Anne Granger for their efforts in developing, planning, supporting and securing funding. The Commanding Officers, Victor Gronmyr and Mike Corfield for work throughout the project and operationalizing the vessel for sea.

The tradespeople, supervisors, and management at Allied Shipbuilders Limited, under the leadership of Chuck Ko.

Gord Fawcett for bringing his experience and practicality to planning and execution. Techsol engineers for the switchboard and overseeing the integration. Maintenance managers Ed Wright and Carissa Tetrault and engineering support from Erica, Colin, Scott, and Ian.

The on sight project teams who spent months living out of a suitcase, oversight and crawling into awkward spaces. Ryan, Dave, Ryan, Ryan, (not à typo - there were 3). Roger, Andrew, Brent, Robin, Tarpan, and Christian. Notable thanks to Ryan Braidwood and David Veldman for the final push to get systems running through trials and ready for program. Gerald for keeping all connected while in the yard.

Tully White cycle for doing all the destoring and dealing with the trials and restoring of the ship.

And, of course, on behalf of the team, Tim Hortons on the Dollarton Hwy.

The Sir Wilfrid Laurier will move into VLE this fall winter, after their return from the Arctic. As indicated in the FOP, the VLE will be split into two time frames, to ensure the Western Arctic program has minimum impacts. Thanks to the CE's, ME teams and COs for the work leading here, and the CO's, CE's, crews, clients and shore management teams for working the additional challenges of a split VLE.

My thanks to all who work the many drydock and refits where time nor money are never enough, and making it work.

The Emergency Support Vessels have had the request for proposals reviewed, and evaluated, and we expect an announcement soon. These 2 crewed vessels will be leased, and will also have small CG teams onboard, scaled to meet CG operational and program requirements.

Work continues on the pay situation. More resources have been put in place, and better linkages into the pay Centre. There was some restructuring to align all of the resources associated with pay to one stream, which was done last month. This has seen some confusion as protocols and requirements were shifted. Please ensure practices are shifted to align with the most current information sent.

More information will follow.

Joanne
RD Fleet

SOURCE Public Services and Procurement Canada

Helping Keep Canada's Waters Safe

GATINEAU, QC, June 22, 2018 /CNW/ - The Government of Canada is committed to providing the women and men of the Canadian Coast Guard with the equipment they need to keep Canadian waters safe, while supporting economic growth.

On behalf of the Canadian Coast Guard, Public Services and Procurement Canada has issued an Advanced Contract Award Notice (ACAN) to Chantier Davie of Lévis, Quebec, for the acquisition and conversion of three medium commercial icebreakers. This ensures a fair, competitive process allowing any supplier with a comparable option to also submit a proposal before a contract is awarded.

The ACAN confirms Canada's intention to enter into a contract with Chantier Davie. Other interested suppliers have 15 calendar days to signal their interest in bidding for this contract, by submitting a "statement of capabilities" that meets the requirements laid out in the ACAN.

These ships would provide interim capability for the Canadian Coast Guard, while replacement vessels are being built under the National Shipbuilding Strategy. Icebreakers are essential to ensuring that Canadian ports remain open during Canada's ice seasons, ensuring goods such as fresh produce and fuel are delivered safely.

Quotes

"Our Government is committed to supporting the Coast Guard in carrying out its crucial work on behalf of all Canadians. We are one step closer to acquiring supplementary

capacity that will support interim icebreaking capability in time for the upcoming icebreaking season. "

The Honourable Carla Qualtrough
Minister of Public Services and Procurement

"The Canadian Coast Guard has unique requirements given Canada's wide range of challenging ice conditions in both our southern waters and the Arctic. We are making sure they have the equipment and tools they need to keep Canadian waters safe and commercial routes open during Canada's ice seasons."

The Honourable Lawrence MacAulay
Minister of Agriculture

Quick facts

- This acquisition will consist of purchasing a class of three existing Anchor Handling Tug Supply icebreakers.
- These ships will be used to backfill for Canadian Coast Guard vessels while they are undergoing maintenance, refit and vessel life extension.
- These ships will conduct critical icebreaking duties for the Southern wintertime program and are to be deployed as needed in support of Arctic summertime programs.
- The first ship will be put to immediate use for icebreaking during the upcoming 2018-2019 season.

<http://www.cbc.ca/news/politics/coast-guard-icebreakers-davie-1.4718592>

Sent by BB

Original Message

From: Gascon, Julie <Julie.Gascon@dfo-mpo.gc.ca>
Sent: Friday, June 22, 2018 4:11 PM
To: Ivany, Gary; Alvaro, Tanya; Moss, Derek; LeBlanc, Michèle (NCR); Veber, Denise; Organ, Jason; McNish, Joanne; Llewellyn, Don
Subject: Fw: Canadian Coast Guard to Acquire Three Interim Icebreakers

Julie Gascon

From: Mackenzie, Joey <Joey.Mackenzie@dfo-mpo.gc.ca>
Sent: Friday, June 22, 2018 3:35 PM
To: Pelletier, Mario; Smith, Andy; Haubert, Marie-Christine; Sanderson, Marc; Gascon, Julie; Wight, Robert; Ryan, Sam
Cc: Hutchinson, Jeffery; Marier, Marie-Michele; Lebel, Mathieu; Girouard, Roger; Vézina, Sylvain; Spurrell, Wade; LeBlanc, Brian (Executive Director, CCGC); Hill, Johanna
Subject: Canadian Coast Guard to Acquire Three Interim Icebreakers

Hello,

Following our NCR townhall, employees are likely wondering about the announcement that was alluded to by the Commissioner.

Senior Managers are encouraged to provide verbal updates to employees on today's great news of the acquisition of three ice-breakers for the Canadian Coast Guard.

At the same time, to take the opportunity to acknowledge the great work undertaken by the Major Projects group in achieving this through the MC and TBS process.

<https://www.canada.ca/en/public-services-procurement/news/2018/06/canada-to-acquire-three-interim-icebreakers.html>

Cheers,

Joey

Joey Mackenzie

Chief of Staff, Commissioner's Office
Canadian Coast Guard / Government of Canada
joey.mackenzie@dfo-mpo.gc.ca / Tel: 613-990-5044

Chef de cabinet, Bureau du commissaire
Garde côtière canadienne/ Gouvernement du Canada
joey.mackenzie@dfo-mpo.gc.ca / Tel: 613-990-5044

CCGS-NGCC, Bartlett Captain

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-25-18 4:11 PM
To: [REDACTED]
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer
Subject: RE: Bartlett - Ambient sampling for ER

Hi [REDACTED]. For the record, I thought it best just to document that yes, the Captain has asked that we continue to monitor the air quality on the Engineroom entrance deck as long as we are working accessing DeckHead Cavities for Swipe testing. We realize that it's technically not required, but we'd rather sample too much than too little. It is illogical to us to have high TEM swipe samples on areas that were previously clean and have good air samples, (although there is no correlation to $>10,000$ s/cm⁴ and $>.1$ f/ml).

Regards

Ross McKenzie
 Chief Engineer, CCGS Bartlett
 Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB


From: [REDACTED]
Sent: June-25-18 11:50 AM
To: CCGS-NGCC, Bartlett Chief Engineer; Chaikin Gabriel
Subject: Bartlett - Ambient sampling for ER

Hi Ross, we now have three sets of ambient samples for the ER work. Would you like us to continue with the ambient sampling or are you satisfied with these results and no longer need to continue? (note: ambient air testing is not required by WorkSafe for the type of cleaning work currently being undertaken by QM – ambient samples have been collected at the request of the temporary CE for piece of mind for the crew).

We're happy to continue if you'd like. Just let me know your preference.

Best,

Project Manager
North West Environmental Group Ltd.



NORTH WEST
 ENVIRONMENTAL GROUP LTD.

★ NEW - Contractor Pricing!

#201 - 415 Gorge Road East
 Victoria, B.C. V8T 2W1

NEW WEBSITE
WWW.NWEST.BC.CA
 1-877-NWEST-50

C: [REDACTED]
 O: (250) 384-9695 ext. [REDACTED]

The information contained in this email message is privileged and confidential information intended only for the use of the party named above. If you have received this communication in error, please notify the author and delete the message from your system. Your cooperation is appreciated.

CCGS-NGCC, Bartlett Captain

From: [REDACTED]
Sent: June-26-18 5:18 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED] Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; Brian Salmon; Grant Rogers
Subject: Re: Bartlett Bulk Reports, DH testing, and confirmation - June 26

Hi Ross, that is the plan. We have been doing 24 hr turn around times. I'm not sure what the ten day span you mention below is related to. I'll have to dig into that.

We will provide results as we get them.

Best,

[REDACTED]

Sent from my Samsung Galaxy smartphone.

----- Original message -----

From: "CCGS-NGCC, Bartlett Chief Engineer" <BartlettCE@ccgs-ngcc.gc.ca>

Date: 2018-06-26 6:01 PM (GMT-07:00)

To: [REDACTED]

Cc: [REDACTED], Chaikin Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>, "CCGS-NGCC, Bartlett Captain" <BartlettCO@ccgs-ngcc.gc.ca>, "CCGS-NGCC, Bartlett Senior Engineer" <BartlettSE@ccgs-ngcc.gc.ca>, [REDACTED]

Subject: FW: Bartlett Bulk Reports, DH testing, and confirmation - June 26

Greetings [REDACTED],

We got a start on DeckHead Cavity Swipes today, but I neglected to discuss the turn-around time for the results. (I think that) we are willing to pay for expedited report analysis, and that the benefit justifies the cost. I would say that if we can obtain the results a week sooner, then that is easily justifiable, (as it could potentially expedite the refit by 1 week). Looking at previous test results, it appears that the time between sampling & reporting was 10 days (June 13 sampling and June 23 results).

I would also suggest that daily samples get sent off for processing, rather than waiting until they are all collected before sending to USA for analysis.

Regards,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: June-25-18 4:21 PM

To: Chaikin Gabriel; CCGS-NGCC, Bartlett Chief Engineer

Cc: [REDACTED]

Subject: RE: Bartlett Bulk Reports, DH testing, and Amb confirmation - June 25

Good afternoon, [REDACTED] will be on site to do the DH testing tomorrow morning. The time will be dependent on when his first job of the day finishes. He'll contact Ross when he gets to the vessel. His contact info is below:

**Occupational Hygiene Technologist
North West Environmental Group Ltd.**

#201 - 415 Gorge Road East
Victoria, B.C. V8T 2W1

C: [REDACTED]

Best,



[REDACTED]
**Project Manager
North West Environmental Group Ltd.**

C. [REDACTED]

From: [REDACTED]

Sent: June 25, 2018 2:06 PM

To: Chaikin, Gabriel (Gabriel.Chaikin@dfo-mpo.gc.ca) <Gabriel.Chaikin@dfo-mpo.gc.ca>; 'CCGS-NGCC, Bartlett Chief Engineer' <BartlettCE@ccgs-ngcc.gc.ca>

Cc: [REDACTED]

Subject: Bartlett Bulk Reports, DH testing, and Amb confirmation - June 25

Good afternoon, please find attached:

1. Bosun's Stores insulation bulk sample results.
2. Stack pipe lagging (exposed when blanket was removed). The sample was negative for asbestos, which makes sense if it was included in the 1990s pipe abatement that occurred in the ER. Note: only one pipe was available to sample at the time. We would need to collect a few more in that space to have a definitive answer. If it's Calsil (powdery) it likely contains crystalline silica, regardless of any asbestos content. There may also be asbestos remnants that were not properly removed during previous abatements concealed beneath newer layers.

As per Gabe's instruction, we will continue with ambient monitoring while cleanup work continues in the ER.

With regard to deckhead wipe sampling:

1. We will bring some poly drop sheets to create an enclosure around the tiles and will use a HEPA vacuum to create directional airflow.
2. Will someone from the Crew be tasked to help with enclosure set up and tile removal?

Please let me know if you have any questions or concerns.

Best,

[REDACTED]

Project Manager
North West Environmental Group Ltd.



★ NEW - Contractor Pricing!
#201 - 415 Gorge Road East
Victoria, B.C. V8T 2W1

C: [REDACTED]
O: (250) 384-9695 ext. [REDACTED]

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Ryan, Sam

From: Richardson, Dena
Sent: Wednesday, June 27, 2018 7:15 PM
To: Pelletier, Mario; Gascon, Julie; Ryan, Sam; Ivany, Gary
Subject: FW: 18-069 Incident Initial Notification, ROC-Western Region, Change to Fleet Readiness Profile. Initial
Attachments: NPHSC One Pager - Bartlett - Abestos.docx

Good evening,

Please see attached a one page synopsis of the Bartlett in anticipation of any questions that may be asked related to the incident notification below. Please note that this document was prepared in advance for tomorrow's National Policy Health and Safety Committee but provides context.

Thank you,

Dena

From: ROC1 / COR1 (DFO/MPO)
Sent: Wednesday, June 27, 2018 6:37 PM
Subject: 18-069 Incident Initial Notification, ROC-Western Region, Change to Fleet Readiness Profile. Initial

**18-069 Incident Initial Notification, ROC-Western Region, Change to Fleet Readiness Profile, Initial NOTIFICATION OF SIGNIFICANT EVENT
CANADIAN COAST GUARD-WESTERN REGION- REGIONAL OPERATIONS CENTRE**

Description of threat/event:

As of 12:00 PDT, 27/June/2018, CCGS Bartlett will enter unscheduled maintenance period to remediate ACM contamination. The estimated time for return to service is July 27th, 2018.

From July 5th, 2018 to July 27th, 2018 (CCGS Bartlett's estimated RTS date) the Canadian Coast Guard will have reduced capability to lift or place floating aids to navigation on the west coast of Canada.

Anticipated Media Attention:

Low.

Program Reporting:

Fleet.

Current CCG Actions:

Contracted ACM mitigation on board CCGS Bartlett is on-going.

Current Actions (other):

MNS has available tugs on an if/when required basis for working Fraser River.

Initial analysis/impact assessment on CCG:

Reduced capacity to lift or place floating aids to navigation on the west coast of Canada. Further delays and added pressures to complete the MNS Buoy program as per the FOP for the remaining year.

Notification provided to:

Standard Distribution.

Next Steps:

Fleet readiness profile adjusted from Ops Normal (Blue) to Ops restricted (White).

DISCLAIMER **This Information is preliminary and subject to change. Further, the information given for some occurrences may not have been verified/validated by CCG. Therefore, caution should be used when using this information.

Bartlett – One Pager for NHPSC

The CCG continues to take significant efforts at asbestos management, including regular surveys of our ships and remediation or encapsulation of ACM where appropriate. In the recent case on the CCGS Bartlett, a comprehensive regime of sampling has been undertaken to provide a broader analysis of risk.

This has included bulk material samples of wiring and other potential sources, dust wipe samples throughout suspect areas and air sampling throughout the ship at various times. Samples of suspect materials confirmed the presence of asbestos in certain specific wiring and in dusts in a variety of locations. It is probable, that in some cases at least, these dusts were residual from previous remediation efforts when cleaning standards were less rigorous than today.

An asbestos remediation contractor is now conducting a thorough cleaning of suspect areas and finalizing a plan to encapsulate material in identified areas. Importantly, air monitoring on the ship in a variety of locations, times including prior the recent cleaning efforts, and operational states have all resulted in results either below the limit of detection or below the limit of quantitation for asbestos. Samples from the ventilation ducts also showed negative for asbestos.

Discussions with the Health Canada Occupational Health Medical Officer and environmental consultants are ongoing and these, in conjunction with the results of air monitoring, have provided CCG with confidence that the risk to personnel from asbestos in the current state should be considered to be very low. The greatest risk of asbestos related disease would be from work involving significant prolonged exposure to high concentrations of air-borne asbestos fibers and that is not indicated in our circumstances. That being said the CCG still maintains a cautious approach and will continue to work with specialists and will monitor, including air sampling, on an ongoing basis.

For CCG ships with asbestos the Fleet Safety Manual 7.A.10, Handling and Containing Asbestos Materials provides guidance. Important principles include that these ships will have a designated Asbestos Coordinator, typically the Chief Engineer, and that this position is responsible for monitor and updating the Vessel Specific Asbestos Management Plan (AMP). In addition, 7.A.10 outlines what must be in the AMP and provides a template.

Due the delayed nature of onset of potential ill health effects, many employees have questions regarding options for documentation of potential exposures. Whether an employee chooses to document in this manner is up to their discretion based upon their own understanding of exposure level and risk. All employees in the Western Region and been provided details and contact information for health officials, both provincial and federal with respect to exposure documentation.

Ayres, Bob

From: Ayres, Bob
Sent: Wednesday, June 27, 2018 9:08 AM
To: Krawciw, Don (HC/SC)
Subject: Re: contact with Health Canada hygienist

Hi Don,
I'll connect with Brian later today. I'm in Quebec with a full day today but time change will give me a chance.
Thanks,
Bob

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Krawciw, Don (HC/SC)
Sent: Wednesday, June 27, 2018 11:58 AM
To: Ayres, Bob
Subject: contact with Health Canada hygienist

It would be good if you could catch Brian this week before you go away in case there are any further issues before the ship sails.

Let me know if you have trouble reaching him.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)
Santé Canada / Gouvernement du Canada
don.krawciw@hc-sc.gc.ca / Tél. : 250-363-3566 / Téléc: 250-363-3668

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Rev #2, 6/28/2018

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541814
Client No.:35254-91b
Volume Filtered (mL):1
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):3700

Area Sampled (cm²):100
Location:Upper D: Laundry Room-HVAC Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):<3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6541815
Client No.:35254-92b

Volume Filtered (mL):0.5
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):7400

Area Sampled (cm²):100
Location:Boat D: Fan Room-HVAC Duct
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 14800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):<7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

Page 1 of 8

001397



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Rev #2, 6/28/2018

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541816
Client No.: 35254-93b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Wheelhouse-HVAC Duct
Asbestos Structures: 6
Structures < 5 Microns: 5
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541817
Client No.: 35254-94b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 7400

Area Sampled (cm²): 100
Location: Poop D: Alley Adjacent Galley-Main
Recirc Duct
Asbestos Structures: 4
Structures < 5 Microns: 3
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 30.8
Structure Concentration (s/cm²): 29600
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

Page 2 of 8

001398



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541818
Client No.: 35254-95b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Upper D: Cabin U-38 Supplemental Heating Duct
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 7.69
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541819
Client No.: 35254-96b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 1850

Area Sampled (cm²): 100
Location: Upper D: 3rd Officer-Supplemental Heating Duct
Asbestos Structures: 2
Structures < 5 Microns: 1
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <1850
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56



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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541820
Client No.:35254-97b
Volume Filtered (mL):1
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):3700

Area Sampled (cm²):100
Location:Boat D: Chief Officer-Supplemental Heating Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):<3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6541821
Client No.:35254-98b
Volume Filtered (mL):50
Dilution Factor (mL):50
Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2
Detection Limit (s/cm²):185

Area Sampled (cm²):100
Location:Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<19.2
Structure Concentration (s/cm²):<185
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Signature:
Analyst:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541822
Client No.: 35254-102b

Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 185

Area Sampled (cm²): 100
Location: Stack-Stbd Air Supply Plenum

Asbestos Structures: 36

Structures < 5 Microns: 33
Structures ≥ 5 μm: 3
Structure Density (s/mm²): 692
Structure Concentration (s/cm²): 6660
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541823
Client No.: 35254-103b

Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Area Sampled (cm²): 100
Location: Stack-Main Engine Water Jacket Tank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): ≤19.2
Structure Concentration (s/cm²): ≤617
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Signature:
Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541824
Client No.: 35254-104b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 463

Area Sampled (cm²): 100
Location: Stack-Exhaust Pipe Support Strut

Asbestos Structures: 15

Structures < 5 Microns: 13
Structures ≥ 5 μm: 2
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 6940
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <463
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541825
Client No.: 35254-105b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 116

Area Sampled (cm²): 400
Location: Stack-Bulkhead Stiffener

Asbestos Structures: 15

Structures < 5 Microns: 12
Structures ≥ 5 μm: 3
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 1730
Asbestos Type(s):
Chrysotile
Tremolite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <116
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:

Dated: 6/28/2018 6:30:56



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541826
Client No.: 35254-106b

Area Sampled (cm²): Blank
Location: Field Blank

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature: _____

Analyst: _____

Approved By: _____

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld, III".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

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001403



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



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CERTIFICATE OF ANALYSIS

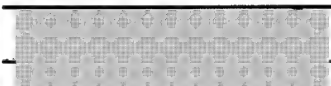
Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765


Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.:35254-91b	Location: Upper D: Laundry Room-HVAC Duct Area (cm ²): 100 Density (s/mm ²): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected
Lab No.:6541815 Client No.:35254-92b	Location: Boat D: Fan Room-HVAC Duct Area (cm ²): 100 Density (s/mm ²): 15.4	Concentration (s/cm ²): 14800 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541816 Client No.:35254-93b	Location: Wheelhouse-HVAC Duct Area (cm ²): 100 Density (s/mm ²): 115	Concentration (s/cm ²): 55500 Asbestos Type(s): Chrysotile Amosite
Lab No.:6541817 Client No.:35254-94b	Location: Poop D: Alley Adjacent Galley-Main Recirc Duct Area (cm ²): 100 Density (s/mm ²): 30.8	Concentration (s/cm ²): 29600 Asbestos Type(s): Chrysotile
Lab No.:6541818 Client No.:35254-95b	Location: Upper D: Cabin U-38 Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): 7.69	Concentration (s/cm ²): 3700 Asbestos Type(s): Chrysotile
Lab No.:6541819 Client No.:35254-96b	Location: Upper D: 3rd Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): 15.4	Concentration (s/cm ²): 3700 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541820 Client No.:35254-97b	Location: Boat D: Chief Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018
Signature: 
Analyst:

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:55

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001405



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541821 Client No.:35254-98b	Location: Field Blank Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <185 Asbestos Type(s): None Detected
Lab No.:6541822 Client No.:35254-102b	Location: Stack-Stbd Air Supply Plenum Area (cm ²): 100 Density (s/mm ²): 692	Concentration (s/cm ²): 6660 Asbestos Type(s): Chrysotile
Lab No.:6541823 Client No.:35254-103b	Location: Stack-Main Engine Water Jacket Tank Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <617 Asbestos Type(s): None Detected
Lab No.:6541824 Client No.:35254-104b	Location: Stack-Exhaust Pipe Support Strut Area (cm ²): 100 Density (s/mm ²): 288	Concentration (s/cm ²): 6940 Asbestos Type(s): Chrysotile
Lab No.:6541825 Client No.:35254-105b	Location: Stack-Bulkhead Stiffener Area (cm ²): 400 Density (s/mm ²): 288	Concentration (s/cm ²): 1730 Asbestos Type(s): Chrysotile Tremolite
Lab No.:6541826 Client No.:35254-106b	Location: Field Blank Area (cm ²): Blank Density (s/mm ²): <7.69	Concentration (s/cm ²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:55

Page 2 of 4



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/28/2018 6:30:55

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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

s.19(1)



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Rev #2, 6/28/2018

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541814
Client No.:35254-91b
Volume Filtered (mL):1
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):3700

Area Sampled (cm²):100
Location:Upper D: Laundry Room-HVAC Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):<3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6541815
Client No.:35254-92b

Volume Filtered (mL):0.5
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):7400

Area Sampled (cm²):100
Location:Boat D: Fan Room-HVAC Duct
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 14800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):<7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

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001409



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541816
Client No.: 35254-93b

Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Wheelhouse-HVAC Duct

Asbestos Structures: 6
Structures < 5 Microns: 5
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541817
Client No.: 35254-94b

Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 7400

Area Sampled (cm²): 100
Location: Poop D: Alley Adjacent Galley-Main
Recirc Duct
Asbestos Structures: 4
Structures < 5 Microns: 3
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 30.8
Structure Concentration (s/cm²): 29600
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

Page 2 of 8



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541818
Client No.: 35254-95b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Upper D: Cabin U-38 Supplemental
Heating Duct
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 7.69
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541819
Client No.: 35254-96b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 1850

Area Sampled (cm²): 100
Location: Upper D: 3rd Officer-Supplemental
Heating Duct
Asbestos Structures: 2
Structures < 5 Microns: 1
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <1850
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Signature:
Analyst:

Approved By:

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201 - 415 Gorge Road East
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Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Rev #2, 6/28/2018

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541820
Client No.: 35254-97b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Boat D: Chief Officer-Supplemental Heating Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541821
Client No.: 35254-98b
Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 185

Area Sampled (cm²): 100
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

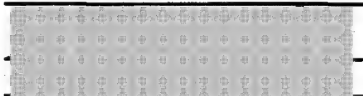
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541822	Area Sampled (cm²): 100	Filter Type: MCE
Client No.: 35254-102b	Location: Stack-Stbd Air Supply Plenum	Filter Size (mm²): 962
Volume Filtered (mL): 50	Asbestos Structures: 36	Pore Size (µm): 0.45
Dilution Factor (mL): 50	Structures < 5 Microns: 33	Non-Asbestos Structures: None Detected
Grid Openings: 4	Structures ≥ 5 µm: 3	Structure Density (s/mm²): <19.2
Opening Area (mm²): 0.013	Structure Density (s/mm²): 692	Structure Concentration (s/cm²): <185
Area Analyzed (mm²): 0.0520	Structure Concentration (s/cm²): 6660	Non-Asbestos Type(s):
Sensitivity (s/mm²): 19.2	Asbestos Type(s):	None Detected
Detection Limit (s/cm²): 185	Chrysotile	

Micrograph Number:

EDXA Spectrum ID:

Lab No.: 6541823	Area Sampled (cm²): 100	Filter Type: MCE
Client No.: 35254-103b	Location: Stack-Main Engine Water Jacket Tank	Filter Size (mm²): 962
Volume Filtered (mL): 15	Asbestos Structures: None Detected	Pore Size (µm): 0.45
Dilution Factor (mL): 50	Structures < 5 Microns: None Detected	Non-Asbestos Structures: None Detected
Grid Openings: 4	Structures ≥ 5 µm: None Detected	Structure Density (s/mm²): <19.2
Opening Area (mm²): 0.013	Structure Density (s/mm²): ≤19.2	Structure Concentration (s/cm²): <617
Area Analyzed (mm²): 0.0520	Structure Concentration (s/cm²): ≤617	Non-Asbestos Type(s):
Sensitivity (s/mm²): 19.2	Asbestos Type(s):	None Detected
Detection Limit (s/cm²): 617	None Detected	

Micrograph Number:

EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature: _____

Analyst: _____

Approved By: _____

Frank E. Ehrenfeld, III

Frank E. Ehrenfeld, III

Laboratory Director

Dated : 6/28/2018 6:30:56

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Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541824
Client No.: 35254-104b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 463

Area Sampled (cm²): 100
Location: Stack-Exhaust Pipe Support Strut

Asbestos Structures: 15
Structures < 5 Microns: 13
Structures ≥ 5 µm: 2
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 6940
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <463
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541825
Client No.: 35254-105b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 116

Area Sampled (cm²): 400
Location: Stack-Bulkhead Stiffener

Asbestos Structures: 15
Structures < 5 Microns: 12
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 1730
Asbestos Type(s):
Chrysotile
Tremolite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <116
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

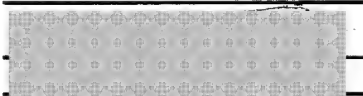
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56

Page 6 of 8



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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Rev #2, 6/28/2018

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541826
Client No.: 35254-106b

Area Sampled (cm²): Blank
Location: Field Blank

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

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001415



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



9000 Commerce Parkway Suite B
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.:35254-91b	Location: Upper D: Laundry Room-HVAC Duct Area (cm ²): 100 Density (s/mm ³): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected
Lab No.:6541815 Client No.:35254-92b	Location: Boat D: Fan Room-HVAC Duct Area (cm ²): 100 Density (s/mm ³): 15.4	Concentration (s/cm ²): 14800 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541816 Client No.:35254-93b	Location: Wheelhouse-HVAC Duct Area (cm ²): 100 Density (s/mm ³): 115	Concentration (s/cm ²): 55500 Asbestos Type(s): Chrysotile Amosite
Lab No.:6541817 Client No.:35254-94b	Location: Poop D: Alley Adjacent Galley-Main Recirc Duct Area (cm ²): 100 Density (s/mm ³): 30.8	Concentration (s/cm ²): 29600 Asbestos Type(s): Chrysotile
Lab No.:6541818 Client No.:35254-95b	Location: Upper D: Cabin U-38 Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ³): 7.69	Concentration (s/cm ²): 3700 Asbestos Type(s): Chrysotile
Lab No.:6541819 Client No.:35254-96b	Location: Upper D: 3rd Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ³): 15.4	Concentration (s/cm ²): 3700 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541820 Client No.:35254-97b	Location: Boat D: Chief Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ³): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:55

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001417

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-27-18 2:31 PM
To: [REDACTED]
Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Engine Room
Subject: FW: Bartlett - Possible Asbestos Spill
Importance: High

Yes [REDACTED]

Sorry for neglecting to cc [REDACTED] & [REDACTED] And thanks for further cleaning & air testing recommendations.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: June-27-18 2:28 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: CCGS-NGCC, Bartlett Captain; Chaikin Gabriel; [REDACTED]
Subject: Re: Bartlett - Possible Asbestos Spill

Hi Ross, please cc [REDACTED] and [REDACTED] on all correspondence so we can assure rapid response.
Sealing it was good. We will sample the material tomorrow. I would ask QM to Hepa vacuum and damp wipe all surfaces within 6 feet. We can set up a couple of ambients on either side in the morning.

Sent from my Samsung Galaxy smartphone.

----- Original message -----

From: "CCGS-NGCC, Bartlett Chief Engineer" <BartlettCE@ccgs-ngcc.gc.ca>
Date: 2018-06-27 3:19 PM (GMT-07:00)
To: [REDACTED]
Cc: "CCGS-NGCC, Bartlett Captain" <BartlettCO@ccgs-ngcc.gc.ca>, Chaikin Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>
Subject: Bartlett - Possible Asbestos Spill

Greetings [REDACTED]

I am concerned that we may have a small scale asbestos spill on Upper Deck Alleyway.

1. CME worker worker was digging into cement / Deck Screed with hand tools, and

2. Found & exposed what appears to be an asbestos fiber layer

We had a suited & masked worker erect poly containment barriers on either side of potential "spill" area.

Should we be taking any other action? Re: Air sampling etc. There is currently an air sample being collected fwd of this area (outside of ER Stb'd), and on the port side Upper Deck.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccg-s-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

CCGS-NGCC, Bartlett Captain

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>
Sent: June-28-18 10:00 PM
To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Captain
Subject: Fw: Bartlett Air Trunking
Attachments: 35254 duct wipes.pdf

Chief, Captain;

This is a surprise but it is good we found it now. I'm glad that Scott arranged the additional wipe samples.

I will inform Superior, PSPC & CME. I believe we should proceed with the cleaning of the affected areas first. We will retest the bridge, especially, once George Koherst has completed his work in the consoles. We should as a team discuss any additional ducting testing before we limit the boundaries of the cleaning to these known areas.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: [REDACTED]
Sent: Thursday, June 28, 2018 20:51
To: Chaikin, Gabriel
Cc: CCGS-NGCC, Bartlett Chief Engineer; [REDACTED]
Subject: RE: Bartlett Air Trunking

Good evening, please find attached the results of wipes samples collected in HVAC ducts and post-cleaning in the Stack last week. Summary as follows.

Ducts

Expected Ambient range

- Upper Deck Cabin U-38 Supplemental Heating Duct (chrysotile)
- Upper Deck 3rd Officer's Cabin Supplemental Heating Duct (chrysotile, amosite)

Moderate range

- Boat Deck Fan Room (amosite, chrysotile)
- Poop Deck, Alley Adjacent Galley, Recirc Duct (chrysotile)

Elevated

- Wheelhouse (chrysotile, amosite)

Stack (clearance wipes) – all expected ambient levels. Asbestos types detected were chrysotile and tremolite.

Recommendations:

- Have a qualified abatement contractor clean the HVAC system, or a qualified duct cleaner that is trained and experienced cleaning asbestos-contaminated HVAC systems.

- Redo surface wipes samples following cleaning.
 - Conduct ambient air testing with HVAC running after the system has been cleaned, inspected, and tested.
 - Apply an approved encapsulated to surfaces within the Stack. Additional cleaning is not warranted at this time.
- Follow asbestos procedures when conducting maintenance work in this space.

Note: ambient air testing during while the vessel was at sea did not show an air quality issue with regard to airborne asbestos.

Let me know if you have any questions. I'll be available from 10:30 am tomorrow.

Best,

[REDACTED]
Project Manager
North West Environmental Group Ltd.

Cell: [REDACTED]
Office: 250-384-9695 ext [REDACTED]
201 – 415 Gorge Road East Victoria, BC V8T 2W1

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]
Sent: June 28, 2018 2:09 PM
To: [REDACTED]
Cc: CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca>
Subject: Bartlett Air Trunking

[REDACTED]
Have you received the results of the seven samples that were taken in the ventilation under direction of Chief Scott Ware?

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.:35254-91b	Location: Upper D: Laundry Room-HVAC Duct Area (cm ²): 100 Density (s/mm ²): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected
Lab No.:6541815 Client No.:35254-92b	Location: Boat D: Fan Room-HVAC Duct Area (cm ²): 100 Density (s/mm ²): 15.4	Concentration (s/cm ²): 14800 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541816 Client No.:35254-93b	Location: Wheelhouse-HVAC Duct Area (cm ²): 100 Density (s/mm ²): 115	Concentration (s/cm ²): 55500 Asbestos Type(s): Chrysotile Amosite
Lab No.:6541817 Client No.:35254-94b	Location: Poop D: Alley Adjacent Galley-Main Recirc Duct Area (cm ²): 100 Density (s/mm ²): 30.8	Concentration (s/cm ²): 29600 Asbestos Type(s): Chrysotile
Lab No.:6541818 Client No.:35254-95b	Location: Upper D: Cabin U-38 Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): 7.69	Concentration (s/cm ²): 3700 Asbestos Type(s): Chrysotile
Lab No.:6541819 Client No.:35254-96b	Location: Upper D: 3rd Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): 15.4	Concentration (s/cm ²): 3700 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541820 Client No.:35254-97b	Location: Boat D: Chief Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected

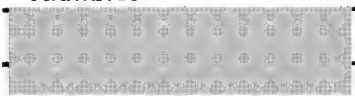
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:55

Page 1 of 4



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541821 Client No.:35254-98b	Location: Field Blank Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <185 Asbestos Type(s): None Detected
Lab No.:6541822 Client No.:35254-102b	Location: Stack-Stbd Air Supply Plenum Area (cm ²): 100 Density (s/mm ²): 692	Concentration (s/cm ²): 6660 Asbestos Type(s): Chrysotile
Lab No.:6541823 Client No.:35254-103b	Location: Stack-Main Engine Water Jacket Tank Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <617 Asbestos Type(s): None Detected
Lab No.:6541824 Client No.:35254-104b	Location: Stack-Exhaust Pipe Support Strut Area (cm ²): 100 Density (s/mm ²): 288	Concentration (s/cm ²): 6940 Asbestos Type(s): Chrysotile
Lab No.:6541825 Client No.:35254-105b	Location: Stack-Bulkhead Stiffener Area (cm ²): 400 Density (s/mm ²): 288	Concentration (s/cm ²): 1730 Asbestos Type(s): Chrysotile Tremolite
Lab No.:6541826 Client No.:35254-106b	Location: Field Blank Area (cm ²): Blank Density (s/mm ²): <7.69	Concentration (s/cm ²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:55

Page 2 of 4

001423



9000 Commerce Parkway Suite B
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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: [REDACTED]
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Air Cassettes
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- (1)Note: Sample not analyzed.
- (2)Note: Sample not analyzed at request of client.
- (3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.
- (4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.
- (5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/28/2018 6:30:55

Page 3 of 4



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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Rev #2, 6/28/2018

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541814
Client No.: 35254-91b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Upper D: Laundry Room-HVAC Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): ≤3700
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541815
Client No.: 35254-92b

Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 7400

Area Sampled (cm²): 100
Location: Boat D: Fan Room-HVAC Duct
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 14800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

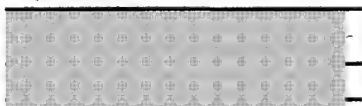
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56

Page 1 of 8



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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541816
Client No.: 35254-93b

Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Wheelhouse-HVAC Duct

Asbestos Structures: 6

Structures < 5 Microns: 5
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541817
Client No.: 35254-94b

Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 7400

Area Sampled (cm²): 100
Location: Poop D: Alley Adjacent Galley-Main
Recirc Duct

Asbestos Structures: 4

Structures < 5 Microns: 3
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 30.8
Structure Concentration (s/cm²): 29600
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Rev #2, 6/28/2018

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541818
Client No.: 35254-95b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Upper D: Cabin U-38 Supplemental Heating Duct
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 7.69
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541819
Client No.: 35254-96b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 1850

Area Sampled (cm²): 100
Location: Upper D: 3rd Officer-Supplemental Heating Duct
Asbestos Structures: 2
Structures < 5 Microns: 1
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <1850
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:

Dated : 6/28/2018 6:30:56



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541820
Client No.: 35254-97b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Boat D: Chief Officer-Supplemental
Heating Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): ≤ 7.69
Structure Concentration (s/cm²): ≤ 3700
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): < 7.69
Structure Concentration (s/cm²): < 3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541821
Client No.: 35254-98b
Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 185

Area Sampled (cm²): 100
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): ≤ 19.2
Structure Concentration (s/cm²): ≤ 185
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): < 19.2
Structure Concentration (s/cm²): < 185
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56

Page 4 of 8



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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541822
Client No.: 35254-102b

Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 185

Area Sampled (cm²): 100
Location: Stack-Stbd Air Supply Plenum

Asbestos Structures: 36

Structures < 5 Microns: 33
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 692
Structure Concentration (s/cm²): 6660
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541823
Client No.: 35254-103b

Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Area Sampled (cm²): 100
Location: Stack-Main Engine Water Jacket Tank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

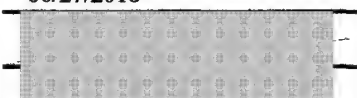
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56

Page 5 of 8



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541824
Client No.: 35254-104b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 463

Area Sampled (cm²): 100
Location: Stack-Exhaust Pipe Support Strut

Asbestos Structures: 15

Structures < 5 Microns: 13
Structures ≥ 5 µm: 2
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 6940
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <463
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541825
Client No.: 35254-105b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 116

Area Sampled (cm²): 400
Location: Stack-Bulkhead Stiffener

Asbestos Structures: 15

Structures < 5 Microns: 12
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 1730
Asbestos Type(s):
Chrysotile
Tremolite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <116
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

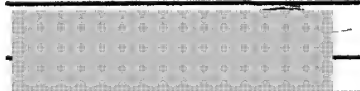
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56

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001431



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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541826
Client No.: 35254-106b

Area Sampled (cm²): Blank
Location: Field Blank

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

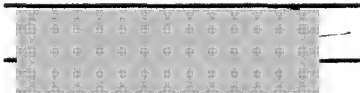
Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

A handwritten signature in black ink, appearing to read "Frank Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56

Page 7 of 8



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 29, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS™
AIIA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

1/6

Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	W	<	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	W	<	
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	W	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS™
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LAB# 202314

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospitala	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	W	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	W	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	W	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	W	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	W	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	W	<	Steve / Top Level / PAPR
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Dennis / 4th Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	W	<	

As per WSEB Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	W	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	W	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	W	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	W	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	W	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-63a	Jun-22-2018	Jun-22-2018	(OCC) MER	OCC	BR	2.26	07:36	08:57	81	7.5	100	183.06	9.55	0.02	V	<	
35254-64a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Port Alleyway	AMB	BR	2.26	08:05	13:48	343	3.5	100	775.18	4.46	<0.01	W	<	
35254-65a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Starboard Alleyway	AMB	BR	2.25	08:01	N/A	N/A	6.0	100	N/A	N/A	N/A			Pump failure
35254-66a	Jun-22-2018	Jun-22-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-67a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:45	13:42	297	2.5	100	742.5	3.18	<0.01	W	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-68a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:47	13:44	297	5.0	100	742.5	6.37	<0.01	W	<	
35254-69a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:31	12:53	262	1.0	100	655	1.27	<0.01	W	<	
35254-70a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:32	12:57	265	2.5	100	662.5	3.18	<0.01	W	<	
35254-71a	Jun-26-2018	Jun-27-2018	(AMB) Adj. 3rd Eng	AMB	BR	2.55	10:18	14:18	240	8.0	100	612	10.19	<0.01	V	<	
35254-72a	Jun-26-2018	Jun-27-2018	(AMB) Ambient 2	AMB	BR	2.55	10:25	14:25	240	5.5	100	612	7.01	<0.01	V	<	
35254-73a	Jun-27-2018	Jun-28-2018	(AMB) U.D. Starboard Alleyway	AMB	JD	2.56	08:40	14:52	372	14.0	100	952.32	17.83	<0.01	V	<	
35254-74a	Jun-27-2018	Jun-28-2018	(AMB) U.D. Port Alleyway	AMB	JD	2.56	08:40	14:52	372	7.5	100	952.32	9.55	<0.01	V	<	
35254-75a	Jun-28-2018	Jun-29-2018	(AMB) U.D. Starboard Alleyway	AMB	JD	2.57	09:11	15:08	357	0.5	100	917.49	0.64	<0.01	W	<	
35254-76a	Jun-28-2018	Jun-29-2018	(AMB) U.D. Port Alleyway	AMB	JD	2.53	09:14	15:11	357	7.5	100	903.21	9.55	<0.01	V	<	
35254-77a	Jun-28-2018	Jun-29-2018	(AMB) U.D. Aft Starboard Alleyway	AMB	JD	2.57	09:20	15:13	353	2.0	100	907.21	2.55	<0.01	W	<	
35254-78a	Jun-28-2018	Jun-29-2018	Field Blank	QC	JD	0	09:11	09:11	0	0.0	100	0	0.00	<0.01			
35254-79a	Jun-29-2018	Jun-29-2018	(AMB) U.D. Starboard Alleyway	AMB	JD	2.53	07:34	11:42	248	5.5	100	627.44	7.01	<0.01	V	<	
35254-80a	Jun-29-2018	Jun-29-2018	(AMB) U.D. Port Alleyway	AMB	JD	2.53	07:36	11:44	248	6.5	100	627.44	8.28	<0.01	V	<	
35254-81a	Jun-29-2018	Jun-29-2018	(AMB) U.D. Aft Starboard Alleyway	AMB	JD	2.53	07:38	11:48	250	6.5	100	632.5	8.28	<0.01	V	<	

As per WSPC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml
AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml
OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)
AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.
QC - quality control: Blank field testing for quality assurance.
OL - overloaded: This is when the air sample is so overloaded that it is unreadable.
VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)
V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)
Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



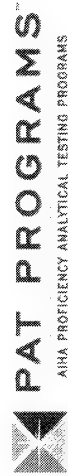
Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.:35254-91b	Location: Upper D: Laundry Room-HVAC Duct Area (cm ²): 100 Density (s/mm ²): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected
Lab No.:6541815 Client No.:35254-92b	Location: Boat D: Fan Room-HVAC Duct Area (cm ²): 100 Density (s/mm ²): 15.4	Concentration (s/cm ²): 14800 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541816 Client No.:35254-93b	Location: Wheelhouse-HVAC Duct Area (cm ²): 100 Density (s/mm ²): 115	Concentration (s/cm ²): 55500 Asbestos Type(s): Chrysotile Amosite
Lab No.:6541817 Client No.:35254-94b	Location: Poop D: Alley Adjacent Galley-Main Recirc Duct Area (cm ²): 100 Density (s/mm ²): 30.8	Concentration (s/cm ²): 29600 Asbestos Type(s): Chrysotile
Lab No.:6541818 Client No.:35254-95b	Location: Upper D: Cabin U-38 Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): 7.69	Concentration (s/cm ²): 3700 Asbestos Type(s): Chrysotile
Lab No.:6541819 Client No.:35254-96b	Location: Upper D: 3rd Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): 15.4	Concentration (s/cm ²): 3700 Asbestos Type(s): Amosite Chrysotile
Lab No.:6541820 Client No.:35254-97b	Location: Boat D: Chief Officer-Supplemental Heating Duct Area (cm ²): 100 Density (s/mm ²): <7.69	Concentration (s/cm ²): <3700 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

A handwritten signature in black ink, appearing to read "Frank E. Ehrenfeld".

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:55

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541821 Client No.:35254-98b	Location: Field Blank Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <185 Asbestos Type(s): None Detected
Lab No.:6541822 Client No.:35254-102b	Location: Stack-Stbd Air Supply Plenum Area (cm ²): 100 Density (s/mm ²): 692	Concentration (s/cm ²): 6660 Asbestos Type(s): Chrysotile
Lab No.:6541823 Client No.:35254-103b	Location: Stack-Main Engine Water Jacket Tank Area (cm ²): 100 Density (s/mm ²): <19.2	Concentration (s/cm ²): <617 Asbestos Type(s): None Detected
Lab No.:6541824 Client No.:35254-104b	Location: Stack-Exhaust Pipe Support Strut Area (cm ²): 100 Density (s/mm ²): 288	Concentration (s/cm ²): 6940 Asbestos Type(s): Chrysotile
Lab No.:6541825 Client No.:35254-105b	Location: Stack-Bulkhead Stiffener Area (cm ²): 400 Density (s/mm ²): 288	Concentration (s/cm ²): 1730 Asbestos Type(s): Chrysotile Tremolite
Lab No.:6541826 Client No.:35254-106b	Location: Field Blank Area (cm ²): Blank Density (s/mm ²): <7.69	Concentration (s/cm ²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Signature:
Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:55

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s.19(1)

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers.

Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/28/2018 6:30:55

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

- (5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
- (6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.
- (7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
- (8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
- (9)Note: Void - overloaded, unable to prep.
- (10)Note: Void - filter damaged.
- (11)Note: No volume supplied.
- (12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
- (13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
- (13A)Note: Volume does not meet AHERA requirements.(<1188 L)
- (14)Note: Geometric Mean = 0.xxxx Structures/cc
- (15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
- (18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



**North West
Environmental Group Ltd.**

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 30, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Art Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	VV	<	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	VV	<	Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	VV	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

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Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VV	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VV	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VV	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VV	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	VV	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	VV	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Steve / Top Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	VV	<	Dennis / 4th Level / PAPR

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LAB# 202314

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concn. (fib/mL)	v/vv	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	VV	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	VV	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	VV	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	VV	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	VV	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-63a	Jun-22-2018	Jun-22-2018	(OCC) MER	OCC	BR	2.26	07:36	08:57	81	7.5	100	183.06	9.55	0.02	V	<	
35254-64a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Port Alleyway	AMB	BR	2.26	08:05	13:48	343	3.5	100	775.18	4.46	<0.01	VV	<	
35254-65a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Starboard Alleyway	AMB	BR	2.25	08:01	N/A	N/A	6.0	100	N/A	N/A	N/A			Pump failure
35254-66a	Jun-22-2018	Jun-22-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-67a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:45	13:42	297	2.5	100	742.5	3.18	<0.01	VV	<	

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LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-68a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:47	13:44	297	5.0	100	742.5	6.37	<0.01	VV	<	
35254-69a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:31	12:53	262	1.0	100	655	1.27	<0.01	VV	<	
35254-70a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:32	12:57	265	2.5	100	662.5	3.18	<0.01	VV	<	
35254-71a	Jun-26-2018	Jun-27-2018	(AMB) Adj. 3rd Eng	AMB	BR	2.55	10:18	14:18	240	8.0	100	612	10.19	<0.01	V	<	
35254-72a	Jun-26-2018	Jun-27-2018	(AMB) Ambient 2	AMB	BR	2.55	10:25	14:25	240	5.5	100	612	7.01	<0.01	V	<	
35254-73a	Jun-27-2018	Jun-28-2018	(AMB) U.D. Starboard Alleyway	AMB	JD	2.56	08:40	14:52	372	14.0	100	952.32	17.83	<0.01	V	<	
35254-74a	Jun-27-2018	Jun-28-2018	(AMB) U.D. Port Alleyway	AMB	JD	2.56	08:40	14:52	372	7.5	100	952.32	9.55	<0.01	V	<	
35254-75a	Jun-28-2018	Jun-29-2018	(AMB) U.D. Starboard Alleyway	AMB	JD	2.57	09:11	15:08	357	0.5	100	917.49	0.64	<0.01	VV	<	
35254-76a	Jun-28-2018	Jun-29-2018	(AMB) U.D. Port Alleyway	AMB	JD	2.53	09:14	15:11	357	7.5	100	903.21	9.55	<0.01	V	<	
35254-77a	Jun-28-2018	Jun-29-2018	(AMB) U.D. Aft Starboard Alleyway	AMB	JD	2.57	09:20	15:13	353	2.0	100	907.21	2.55	<0.01	VV	<	
35254-78a	Jun-28-2018	Jun-29-2018	Field Blank	QC	JD	0	09:11	09:11	0	0.0	100	0	0.00	<0.01			
35254-79a	Jun-29-2018	Jun-29-2018	(AMB) U.D. Starboard Alleyway	AMB	JD	2.53	07:34	11:42	248	5.5	100	627.44	7.01	<0.01	V	<	
35254-80a	Jun-29-2018	Jun-29-2018	(AMB) U.D. Port Alleyway	AMB	JD	2.53	07:36	11:44	248	6.5	100	627.44	8.28	<0.01	V	<	
35254-81a	Jun-29-2018	Jun-29-2018	(AMB) U.D. Aft Starboard Alleyway	AMB	JD	2.53	07:38	11:48	250	6.5	100	632.5	8.28	<0.01	V	<	
35254-82a	Jun-29-2018	Jun-30-2018	(AC) Watertight Door	AC	BR	15.77	15:24	18:25	181	1.5	100	2854.37	1.91	<0.01	VV	<	
35254-83a	Jun-29-2018	Jun-30-2018	(AC) Watertight Door	AC	BR	15.77	15:38	18:56	198	11.5	100	3122.46	14.65	<0.01	V	<	
35254-84a	Jun-29-2018	Jun-30-2018	(OCC) Occupational	OCC	BR	2.04	13:17	14:18	61	3.0	100	124.44	3.82	<0.01	VV	<	Occ Myles, Port Watertight Door, Hammer Drill, PAPR.
35254-85a	Jun-30-2018	Jun-30-2018	(AC) Engine Room - Forward	AC	BR	17.05	08:55	11:32	157	2.5	100	2676.85	3.18	<0.01	VV	<	

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LAB# 202314

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-86a	Jun-30-2018	Jun-30-2018	(AC) Engine Room - Starboard Aft	AC	BR	17.05	09:00	11:34	154	2.0	100	2625.7	2.55	<0.01	VV	<	
35254-87a	Jun-30-2018	Jun-30-2018	(AC) Engine Room - Port Aft	AC	BR	17.05	09:03	11:37	154	1.0	100	2625.7	1.27	<0.01	VV	<	
35254-88a	Jun-30-2018	Jun-30-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-89a	Jun-30-2018	Jun-30-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm²)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm²)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314



**North West
Environmental Group Ltd.**

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - DH & HVAC Procedures & Testing

Date: July 23, 2018
Client Job or PO#: BARTLETT
Project number: 35917

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35917-1a	Jul-20-2018	Jul-23-2018	(AMB) Cabin U-26	AMB	BR	2.56	12:16	22:16	600	9.5	100	1536	12.10	<0.01	V	<	Collected By CC
35917-2a	Jul-20-2018	Jul-23-2018	(AMB) Cabin U-17	AMB	BR	2.56	11:27	21:27	600	8.0	100	1536	10.19	<0.01	V	<	Collected By CC
35917-3a	Jul-21-2018	Jul-23-2018	(AMB) Cabin P-1	AMB	BR	2.56	08:42	18:42	600	12.0	100	1536	15.29	<0.01	V	<	Collected By CC

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

"Nwest did not collect the samples, or design or oversee the scope of work or activities on this site. This report only provides analytical results for the samples as they were presented to the NWest laboratory and do not take into account the site conditions or other factors which may interfere with sampling conditions or contaminant concentrations. Sample results should always be considered in concert with site conditions and other influencing factors."



LAB# 202314

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AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

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LAB# 202314



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541814
Client No.: 35254-91b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Upper D: Laundry Room-HVAC Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541815
Client No.: 35254-92b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 7400

Area Sampled (cm²): 100
Location: Boat D: Fan Room-HVAC Duct
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 14800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

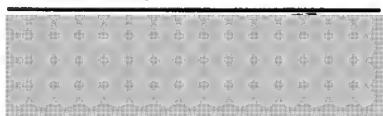
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541816
Client No.: 35254-93b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Wheelhouse-HVAC Duct
Asbestos Structures: 6
Structures < 5 Microns: 5
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541817
Client No.: 35254-94b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 7400

Area Sampled (cm²): 100
Location: Poop D: Alley Adjacent Galley-Main
Recirc Duct
Asbestos Structures: 4
Structures < 5 Microns: 3
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 30.8
Structure Concentration (s/cm²): 29600
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Signature:
Analyst:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

Page 2 of 8

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541818
Client No.: 35254-95b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Upper D: Cabin U-38 Supplemental Heating Duct
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 7.69
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541819
Client No.: 35254-96b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 1850

Area Sampled (cm²): 100
Location: Upper D: 3rd Officer-Supplemental Heating Duct
Asbestos Structures: 2
Structures < 5 Microns: 1
Structures ≥ 5 μm: 1
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <1850
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Signature:
Analyst:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541820
Client No.:35254-97b
Volume Filtered (mL):1
Dilution Factor (mL):50
Grid Openings:10
Opening Area (mm²):0.013
Area Analyzed (mm²):0.130
Sensitivity (s/mm²):7.69
Detection Limit (s/cm²):3700

Area Sampled (cm²):100
Location:Boat D: Chief Officer-Supplemental Heating Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<7.69
Structure Concentration (s/cm²):<3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6541821
Client No.:35254-98b
Volume Filtered (mL):50
Dilution Factor (mL):50
Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2
Detection Limit (s/cm²):185

Area Sampled (cm²):100
Location:Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (μm):0.45
Non-Asbestos Structures:None Detected
Structure Density (s/mm²):<19.2
Structure Concentration (s/cm²):<185
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

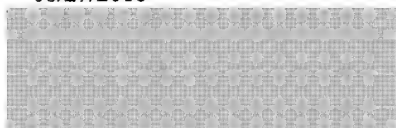
Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Rev #2, 6/28/2018

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541822
Client No.: 35254-102b
Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 185

Area Sampled (cm²): 100
Location: Stack-Stbd Air Supply Plenum
Asbestos Structures: 36
Structures < 5 Microns: 33
Structures ≥ 5 μm: 3
Structure Density (s/mm²): 692
Structure Concentration (s/cm²): 6660
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541823
Client No.: 35254-103b
Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Area Sampled (cm²): 100
Location: Stack-Main Engine Water Jacket Tank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Signature:
Analyst:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56



9000 Commerce Parkway Suite B
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541824
Client No.:35254-104b

Volume Filtered (mL):20
Dilution Factor (mL):50
Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2
Detection Limit (s/cm²):463

Area Sampled (cm²):100
Location:Stack-Exhaust Pipe Support Strut

Asbestos Structures: 15

Structures < 5 Microns: 13
Structures ≥ 5 µm: 2
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 6940
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<19.2
Structure Concentration (s/cm²):<463
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.:6541825
Client No.:35254-105b

Volume Filtered (mL):20
Dilution Factor (mL):50
Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2
Detection Limit (s/cm²):116

Area Sampled (cm²):400
Location:Stack-Bulkhead Stiffener

Asbestos Structures: 15

Structures < 5 Microns: 12
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 1730
Asbestos Type(s):
Chrysotile
Tremolite

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures:None Detected

Structure Density (s/mm²):<19.2
Structure Concentration (s/cm²):<116
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Signature:
Analyst:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

Page 6 of 8

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541826
Client No.: 35254-106b
Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Area Sampled (cm²): Blank
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): ≤7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Signature:
Analyst:



Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

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9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254



North West
Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 27, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

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001460

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concn. (fib/mL)	v/v	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	V	<	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	V	<	
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	V	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



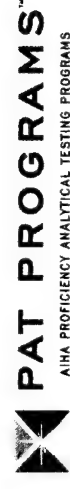
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AIAA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

2/5

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VV	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VV	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VV	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VV	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	VV	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	VV	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Steve / Top Level / 4th PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	VV	<	Dennis / 4th Level / PAPR

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	VV	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	VV	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	VV	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	VV	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	VV	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-63a	Jun-22-2018	Jun-22-2018	(OCC) MER	OCC	BR	2.26	07:36	08:57	81	7.5	100	183.06	9.55	0.02	V	<	
35254-64a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Port Alleyway	AMB	BR	2.26	08:05	13:48	343	3.5	100	775.18	4.46	<0.01	VV	<	
35254-65a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Starboard Alleyway	AMB	BR	2.25	08:01	N/A	N/A	6.0	100	N/A	N/A	N/A			Pump failure
35254-66a	Jun-22-2018	Jun-22-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-67a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:45	13:42	297	2.5	100	742.5	3.18	<0.01	VV	<	

As per WSCB Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-68a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:47	13:44	297	5.0	100	742.5	6.37	<0.01	VV	<	
35254-69a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:31	12:53	262	1.0	100	655	1.27	<0.01	VV	<	
35254-70a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:32	12:57	265	2.5	100	662.5	3.18	<0.01	VV	<	
35254-71a	Jun-26-2018	Jun-27-2018	(AMB) Adj. 3rd Eng	AMB	BR	2.55	10:18	14:18	240	8.0	100	612	10.19	<0.01	V	<	
35254-72a	Jun-26-2018	Jun-27-2018	(AMB) Ambient 2	AMB	BR	2.55	10:25	14:25	240	5.5	100	612	7.01	<0.01	V	<	

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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**North West
Environmental Group Ltd.**

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Tel: (250) 384-9695
Fax: (250) 384-9865
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Bulk Sample Report

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 25, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Location	Date Analyzed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-107/b Layer 1	Stack	Jun-25-2018	JD	Pipe Lagging	Pink	50	None Detected	0	Glass (5%) Non-Fibrous (95%)	100	
35254-107/b Layer 2	Stack	Jun-25-2018	JD	Pipe Lagging	Grey	25	None Detected	0	Glass (30%) Non-Fibrous (70%)	100	
35254-107/b Layer 3	Stack	Jun-25-2018	JD	Pipe Lagging	Pipe Wrap - White	25	None Detected	0	Glass	100	



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LAB# 202314



**North West
Environmental Group Ltd.**

Bulk Sample Report

201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

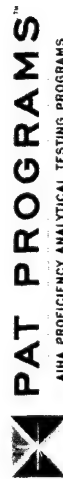
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-99b	Boson Stores - Beneath Perforated Metal Panels	Jun-21-2018	JD	Deckhead/Bulkhead Insulation	Pink	100	None Detected	0	Glass	100	
35254-100b	Boson Stores - Beneath Perforated Metal Panels	Jun-21-2018	JD	Deckhead/Bulkhead Insulation	Yellow	100	None Detected	0	Glass	100	
35254-101b	Boson Stores - Beneath Perforated Metal Panels	Jun-21-2018	JD	Deckhead/Bulkhead Insulation	Pink	100	None Detected	0	Glass	100	



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LAB# 202314



**North West
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201 - 415 Gorge Road East
Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 25, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

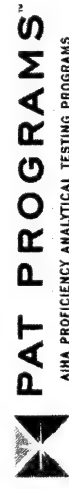


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AIA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/v	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	W	<	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	W	<	Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	W	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospital	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	W	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	W	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	W	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	W	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	W	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	W	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Steve / Top Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	W	<	Dennis / 4th Level / PAPR

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	VV	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	VV	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	VV	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	VV	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	VV	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-63a	Jun-22-2018	Jun-22-2018	(OCC) MER	OCC	BR	2.26	07:36	08:57	81	7.5	100	183.06	9.55	0.02	V	<	
35254-64a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Port Alleyway	AMB	BR	2.26	08:05	13:48	343	3.5	100	775.18	4.46	<0.01	VV	<	
35254-65a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Starboard Alleyway	AMB	BR	2.25	08:01	N/A	N/A	6.0	100	N/A	N/A	N/A			Pump failure
35254-66a	Jun-22-2018	Jun-22-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-67a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:45	13:42	297	2.5	100	742.5	3.18	<0.01	VV	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-68a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:47	13:44	297	5.0	100	742.5	6.37	<0.01	VV	<	
35254-69a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:31	12:53	262	1.0	100	655	1.27	<0.01	VV	<	
35254-70a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:32	12:57	265	2.5	100	662.5	3.18	<0.01	VV	<	

***Legend and Explanation of Terms**

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibres/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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**North West
Environmental Group Ltd.**

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Victoria, BC V8T 2W1

Tel: (250) 384-9695
Fax: (250) 384-9865
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Air Sample Report

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 25, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	AMB	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	VV	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	V	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	VV	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	VV	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	VV	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Sample No	Date Collected	Date Analyzed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	OCC	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	W	<	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	V	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	V	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	V	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	V	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	V	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	OCC	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	W	<	Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	W	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	V	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	JD	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	V	<	

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm ²)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospitala	AMB	JD	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	VW	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	VW	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	VW	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	VW	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	V	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	V	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	V	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	V	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	V	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	V	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	V	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	VW	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	VW	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	V	<	Steve / Top Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	OCC	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	VW	<	Dennis / 4th Level / PAPR

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

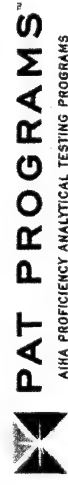


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LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	VV	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	V	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	VV	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	V	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	V	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	V	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	V	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	VV	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	VV	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	VV	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-63a	Jun-22-2018	Jun-22-2018	(OCC) MER	OCC	BR	2.26	07:36	08:57	81	7.5	100	183.06	9.55	0.02	V	<	
35254-64a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Port Alleyway	AMB	BR	2.26	08:05	13:48	343	3.5	100	775.18	4.46	<0.01	VV	<	
35254-65a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Starboard Alleyway	AMB	BR	2.25	08:01	N/A	N/A	6.0	100	N/A	N/A	N/A			Pump failure
35254-66a	Jun-22-2018	Jun-22-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-67a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:45	13:42	297	2.5	100	742.5	3.18	<0.01	VV	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-68a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:47	13:44	297	5.0	100	742.5	6.37	<0.01	VV	<	
35254-69a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 1	AMB	JD	2.5	08:31	12:53	262	1.0	100	655	1.27	<0.01	VV	<	
35254-70a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:32	12:57	265	2.5	100	662.5	3.18	<0.01	VV	<	

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibres/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

5/5

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Senior Engineer
Sent: June-29-18 6:53 AM
To: CCGS-NGCC, Bartlett Chief Engineer; Chaikin Gabriel
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer
Subject: RE: Bartlett HVAC Trunking - Contaminated with ACM

I fully support the suggestion of Chief Ross, this is not just dust above the deckhead panels but rather ACM dust in the HVAC and accommodation ventilation duct.

Regards

Assamoi Assi
Senior Engineer, CCGS Bartlett

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-29-18 6:33 AM
To: Chaikin Gabriel
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer
Subject: RE: Bartlett HVAC Trunking - Contaminated with ACM
Importance: High

Gabe,

With 5 out of 7 duct swipes being positive for moderate levels of ACM dust, it would be a mistake to assume that the remainder of the untested ducting is good.

I suggest that the entire ducting be cleaned.

Regards

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [<mailto:Gabriel.Chaikin@dfo-mpo.gc.ca>]
Sent: June-28-18 10:00 PM
To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Captain
Subject: Fw: Bartlett Air Trunking

Chief, Captain;

This is a surprise but it is good we found it now. I'm glad that Scott arranged the additional wipe samples.

I will inform Superior, PSPC & CME. I believe we should proceed with the cleaning of the affected areas first. We will retest the bridge, especially, once George Koherst has completed his work in the consoles. We should as a team discuss any additional ducting testing before we limit the boundaries of the cleaning to these known areas.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: [REDACTED]
Sent: Thursday, June 28, 2018 20:51
To: Chaikin, Gabriel
Cc: CCGS-NGCC, Bartlett Chief Engineer; [REDACTED]
Subject: RE: Bartlett Air Trunking

Good evening, please find attached the results of wipes samples collected in HVAC ducts and post-cleaning in the Stack last week. Summary as follows.

Ducts

Expected Ambient range

- Upper Deck Cabin U-38 Supplemental Heating Duct (chrysotile)
- Upper Deck 3rd Officer's Cabin Supplemental Heating Duct (chrysotile, amosite)

Moderate range

- Boat Deck Fan Room (amosite, chrysotile)
- Poop Deck, Alley Adjacent Galley, Recirc Duct (chrysotile)

Elevated

- Wheelhouse (chrysotile, amosite)

Stack (clearance wipes) – all expected ambient levels. Asbestos types detected were chrysotile and tremolite.

Recommendations:

- Have a qualified abatement contractor clean the HVAC system, or a qualified duct cleaner that is trained and experienced cleaning asbestos-contaminated HVAC systems.
- Redo surface wipes samples following cleaning.
- Conduct ambient air testing with HVAC running after the system has been cleaned, inspected, and tested.
- Apply an approved encapsulated to surfaces within the Stack. Additional cleaning is not warranted at this time. Follow asbestos procedures when conducting maintenance work in this space.

Note: ambient air testing during while the vessel was at sea did not show an air quality issue with regard to airborne asbestos.

Let me know if you have any questions. I'll be available from 10:30 am tomorrow.

Best,

[REDACTED]
Project Manager
North West Environmental Group Ltd.

Cell: [REDACTED]
Office: 250-384-9695 ext [REDACTED]
201 – 415 Gorge Road East Victoria, BC V8T 2W1

From: Chaikin, Gabriel [<mailto:Gabriel.Chaikin@dfo-mpo.gc.ca>]

Sent: June 28, 2018 2:09 PM

To: [REDACTED]

Cc: CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca>

Subject: Bartlett Air Trunking

[REDACTED]

Have you received the results of the seven samples that were taken in the ventilation under direction of Chief Scott Ware?

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

CCGS-NGCC, Bartlett Chief Officer

s.21(1)(b)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: July-01-18 4:14 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room
Cc: CCGS-NGCC, Bartlett Chief Officer
Subject: FW: SAFETY - PJSAs

Importance: High

Assamoi, Gord, Tom & Kyle

Technically, this watertight door cement issue was a "near miss" and not a "spill" per se, because there was not any airborne asbestos measured (and fortunately we were taking an air sample at the time).

The Incident Investigation is still in the process of being conducted, and the IIR not yet completed, but some of the most important lessons include:

1. Consider the ACM implications (and all other hazards) in every job we do.
2. Consult the most current Asbestos Inventory for every job that we do.
3. Perform a PJSa for any work for which there is not an ISM procedure for, particular contractor work. And log this in the Chief Engineer's Log (especially if we do not actually complete the paperwork). One point recently discussed, was that at least one hazard must be identified before proceeding with the job, (otherwise we're not thinking hard enough).
4. We (C/E, S/E, and QA) must know exactly what the contractors are doing at all times. Not just which job they are working on, but which element of that job. If it is not in the spec then we must know if there is an approved WER for the work. And we must be conscious to the greatest extent possible of any safety hazards that have gone unrecognized.

Your heightened interest in maximizing safety in this refit and in the discharge of normal shipboard operations would be appreciated.

Thanks,

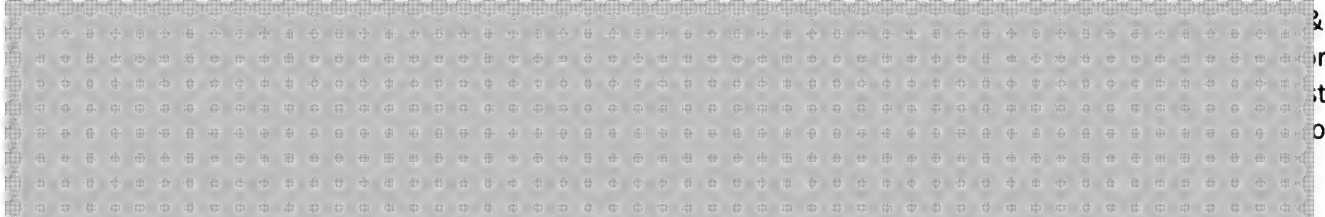


Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: June-30-18 4:32 PM

To: Chaikin Gabriel
Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer
Subject: RE: ACM on ship as per Environmental Assessment
Importance: High

Gabe,

1. I have consulted with the Captain and Marine Superintendent on this issue (Capt M. Shuckburg), and we are proceeding in a responsible manner.

2. 
3. 
4. 


Regards,

s.16(2)

s.19(1)



Ross McKenzie
Chief Engineer, CCGS Bartlett

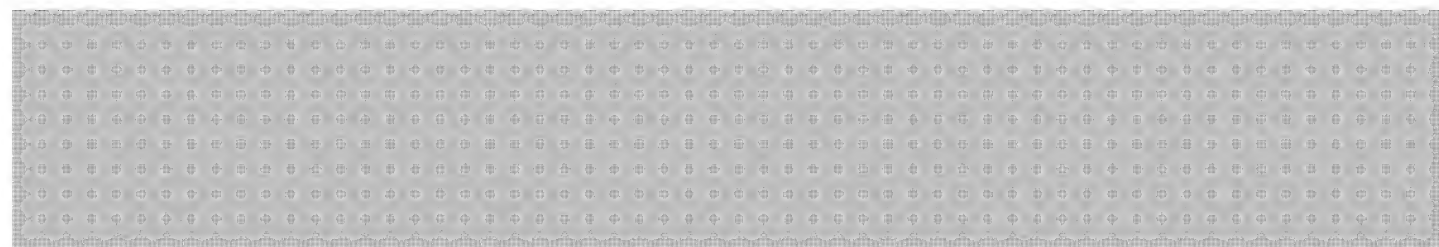
s.21(1)(b)

Cell: 
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]
Sent: June-30-18 2:17 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: Re: ACM on ship as per Environmental Assessment

Ross,

On Friday morning at our WER meeting  and I talked this out.  came in also and I had him relay the event. From all of our perspective there is low possibility of exposure. That doesn't mean there isn't a chance.



Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: Saturday, June 30, 2018 09:47

To: [REDACTED]

Cc: Chaikin, Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer

Subject: RE: ACM on ship as per Environmental Assessment

Good Day [REDACTED]

It is regrettable that this incident transpired. We are conducting our own Incident Investigation regarding this matter, and shall likely be consulting with you & your staff in the process of completing our investigation, after which we will be in a better position to directly reply to your questions to your full satisfaction.

Respectfully,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccgsg-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]

Sent: June-29-18 10:52 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: ACM on ship as per Environmental Assessment

Ross,

It has come to my attention that a material containing ACM was disturbed while servicing on the water tight doors. I realize the environmental assessment has been forwarded to me and I have made a copy available to my crew. As I have to do a safety investigation about this incident the one glaring thing that has come to my attention is that in contravention with WorksafeBC regulations as follows;

6.13 Designated area

- (1) Before starting work with asbestos-containing material, the employer must, with due regard for the level of risk,
 - (a) identify and mark the boundary of the designated work area by barricades, fences, or similar means,
 - (b) ensure that the immediate work area is cleared of objects, materials and equipment other than that required to do the work, and
- ensure that windows, doorways and all other openings are adequately secured to prevent the release of asbestos fibre into other work areas.

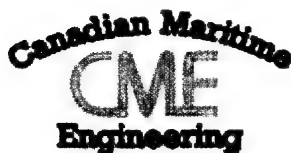
(2) **The employer must post signs at the boundaries of the designated work area indicating asbestos work is in progress, the hazards, and the precautions required for entering the work area.**

(3) **The employer must restrict entry into the designated work area to authorized persons who are adequately protected against the level of risk within the designated work area.**

In light of that, my question to you is, who is ultimately responsible during the refit period or otherwise to ensure the safety of the crew and subcontractors by providing the necessary engineering controls, (IE – signage, PPE, training etc), for the ship?

Regards,

[REDACTED]
Project Manager,
Quality Control, Occupational Health and Safety
Ultrasonic Testing Representative



Canadian Maritime Engineering Ltd. West Coast Division
854 Devonshire Rd. Victoria, BC, V9A 4T4

Cell: [REDACTED]
Phone: (250) 475-3553
Fax: (250) 590-0972
Email: [REDACTED]
Website: www.cmelimited.com

CME is a division of the Russell Group of Companies www.russellindustries.com

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: July-02-18 9:01 AM
To: CCGS-NGCC, Bartlett Logistics Officer
Cc: CCGS-NGCC, Bartlett Senior Engineer
Subject: FW: Bartlett Air Trunking
Attachments: 35254 duct wipes.pdf

FYI. Historical.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccgsg-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: June-28-18 8:52 PM
To: Chaikin Gabriel
Cc: CCGS-NGCC, Bartlett Chief Engineer; [REDACTED]
Subject: RE: Bartlett Air Trunking

Good evening, please find attached the results of wipes samples collected in HVAC ducts and post-cleaning in the Stack last week. Summary as follows.

Ducts

Expected Ambient range

- Upper Deck Cabin U-38 Supplemental Heating Duct (chrysotile)
- Upper Deck 3rd Officer's Cabin Supplemental Heating Duct (chrysotile, amosite)

Moderate range

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- Poop Deck, Alley Adjacent Galley, Recirc Duct (chrysotile)

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- Wheelhouse (chrysotile, amosite)

Stack (clearance wipes) – all expected ambient levels. Asbestos types detected were chrysotile and tremolite.


Recommendations:



- Have a qualified abatement contractor clean the HVAC system, or a qualified duct cleaner that is trained and experienced cleaning asbestos-contaminated HVAC systems.
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- Conduct ambient air testing with HVAC running after the system has been cleaned, inspected, and tested.
- Apply an approved encapsulated to surfaces within the Stack. Additional cleaning is not warranted at this time. Follow asbestos procedures when conducting maintenance work in this space.


Note: ambient air testing during while the vessel was at sea did not show an air quality issue with regard to airborne asbestos.


Let me know if you have any questions. I'll be available from 10:30 am tomorrow.

Best,


Project Manager
North West Environmental Group Ltd.

Cell: 
Office: 250-384-9695 ext 
201 – 415 Gorge Road East Victoria, BC V8T 2W1

From: Chaikin, Gabriel [<mailto:Gabriel.Chaikin@dfo-mpo.gc.ca>]
Sent: June 28, 2018 2:09 PM
To: 
Cc: CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca>
Subject: Bartlett Air Trunking


Have you received the results of the seven samples that were taken in the ventilation under direction of Chief Scott Ware?

Regards

Gabe

 Sent from my BlackBerry 10 smartphone on the Bell network.



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814
Client No.:35254-91b

Location: Upper D: Laundry Room-HVAC Duct
Area (cm²): 100
Density (s/mm²): <7.69
Concentration (s/cm²): <3700
Asbestos Type(s): None Detected

Lab No.:6541815
Client No.:35254-92b

Location: Boat D: Fan Room-HVAC Duct
Area (cm²): 100
Density (s/mm²): 15.4
Concentration (s/cm²): 14800
Asbestos Type(s): Amosite Chrysotile

Lab No.:6541816
Client No.:35254-93b

Location: Wheelhouse-HVAC Duct
Area (cm²): 100
Density (s/mm²): 115
Concentration (s/cm²): 55500
Asbestos Type(s): Chrysotile Amosite

Lab No.:6541817
Client No.:35254-94b

Location: Poop D: Alley Adjacent Galley-Main
Recirc Duct
Area (cm²): 100
Density (s/mm²): 30.8
Concentration (s/cm²): 29600
Asbestos Type(s): Chrysotile

Lab No.:6541818
Client No.:35254-95b

Location: Upper D: Cabin U-38 Supplemental
Heating Duct
Area (cm²): 100
Density (s/mm²): 7.69
Concentration (s/cm²): 3700
Asbestos Type(s): Chrysotile

Lab No.:6541819
Client No.:35254-96b

Location: Upper D: 3rd Officer-Supplemental
Heating Duct
Area (cm²): 100
Density (s/mm²): 15.4
Concentration (s/cm²): 3700
Asbestos Type(s): Amosite Chrysotile

Lab No.:6541820
Client No.:35254-97b

Location: Boat D: Chief Officer-Supplemental
Heating Duct
Area (cm²): 100
Density (s/mm²): <7.69
Concentration (s/cm²): <3700
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:55

Page 1 of 4



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6541821 Client No.: 35254-98b	Location: Field Blank Area (cm ²): 100 Density (g/mm ³): <19.2	Concentration (g/cm ²): <185 Asbestos Type(s): None Detected
Lab No.: 6541822 Client No.: 35254-102b	Location: Stack-Stbd Air Supply Plenum Area (cm ²): 100 Density (g/mm ³): 692	Concentration (g/cm ²): 6660 Asbestos Type(s): Chrysotile
Lab No.: 6541823 Client No.: 35254-103b	Location: Stack-Main Engine Water Jacket Tank Area (cm ²): 100 Density (g/mm ³): <19.2	Concentration (g/cm ²): <617 Asbestos Type(s): None Detected
Lab No.: 6541824 Client No.: 35254-104b	Location: Stack-Exhaust Pipe Support Strut Area (cm ²): 100 Density (g/mm ³): 288	Concentration (g/cm ²): 6940 Asbestos Type(s): Chrysotile
Lab No.: 6541825 Client No.: 35254-105b	Location: Stack-Bulkhead Stiffener Area (cm ²): 400 Density (g/mm ³): 288	Concentration (g/cm ²): 1730 Asbestos Type(s): Chrysotile Tremolite
Lab No.: 6541826 Client No.: 35254-106b	Location: Field Blank Area (cm ²): Blank Density (g/mm ³): <7.69	Concentration (g/cm ²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature: _____

Analyst: _____

Approved By: _____

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:55

Page 2 of 4

001487



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC
Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative: [REDACTED]

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iatl.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated : 6/28/2018 6:30:55

Page 3 of 4



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements (<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541814
Client No.: 35254-91b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Upper D: Laundry Room-HVAC Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541815
Client No.: 35254-92b
Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 7400

Area Sampled (cm²): 100
Location: Boat D: Fan Room-HVAC Duct
Asbestos Structures: 2
Structures < 5 Microns: 2
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 14800
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541816
Client No.: 35254-93b

Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 9250

Area Sampled (cm²): 100
Location: Wheelhouse-HVAC Duct

Asbestos Structures: 6
Structures < 5 Microns: 5
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 55500
Asbestos Type(s):
Chrysotile
Amosite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <9250
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541817
Client No.: 35254-94b

Volume Filtered (mL): 0.5
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 7400

Area Sampled (cm²): 100
Location: Poop D: Alley Adjacent Galley-Main
Recirc Duct
Asbestos Structures: 4
Structures < 5 Microns: 3
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 30.8
Structure Concentration (s/cm²): 29600
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <7400
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature: _____

Analyst: _____

Approved By: _____

Frank E. Ehrenfeld, III

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

Page 2 of 8



9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541818
Client No.: 35254-95b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Upper D: Cabin U-38 Supplemental Heating Duct
Asbestos Structures: 1
Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 7.69
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541819
Client No.: 35254-96b
Volume Filtered (mL): 2
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 1850

Area Sampled (cm²): 100
Location: Upper D: 3rd Officer-Supplemental Heating Duct
Asbestos Structures: 2
Structures < 5 Microns: 1
Structures ≥ 5 µm: 1
Structure Density (s/mm²): 15.4
Structure Concentration (s/cm²): 3700
Asbestos Type(s):
Amosite
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <1850
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature: _____

Analyst: _____

Approved By: _____

Frank E. Ehrenfeld, III

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

Page 3 of 8



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe Rev #2, 6/28/2018
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541820
Client No.: 35254-97b
Volume Filtered (mL): 1
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100
Location: Boat D: Chief Officer-Supplemental Heating Duct
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): <3700
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541821
Client No.: 35254-98b
Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 185

Area Sampled (cm²): 100
Location: Field Blank
Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 μm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:
Analyst:



Dated : 6/28/2018 6:30:56

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9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

Rev #2, 6/28/2018

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541822
Client No.: 35254-102b

Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 185

Area Sampled (cm²): 100
Location: Stack-Stbd Air Supply Plenum

Asbestos Structures: 36
Structures < 5 Microns: 33
Structures ≥ 5 µm: 3
Structure Density (s/mm²): 692
Structure Concentration (s/cm²): 6660
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <185
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541823
Client No.: 35254-103b

Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 617

Area Sampled (cm²): 100
Location: Stack-Main Engine Water Jacket Tank

Asbestos Structures: None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Asbestos Type(s):
None Detected

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <617
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Signature:

Analyst:

Dated : 6/28/2018 6:30:56



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541824
Client No.: 35254-104b
Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 463

Area Sampled (cm²): 100
Location: Stack-Exhaust Pipe Support Strut
Asbestos Structures: 15
Structures < 5 Microns: 13
Structures ≥ 5 μm: 2
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 6940
Asbestos Type(s):
Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <463
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Lab No.: 6541825
Client No.: 35254-105b

Volume Filtered (mL): 20
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520
Sensitivity (s/mm²): 19.2
Detection Limit (s/cm²): 116

Area Sampled (cm²): 400
Location: Stack-Bulkhead Stiffener
Asbestos Structures: 15
Structures < 5 Microns: 12
Structures ≥ 5 μm: 3
Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 1730
Asbestos Type(s):
Chrysotile
Tremolite

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (μm): 0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²): <19.2
Structure Concentration (s/cm²): <116
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018

Date Analyzed: 06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

Page 6 of 8



9000 Commerce Parkway Suite B
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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1
Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Rev #2, 6/28/2018
Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541826
Client No.: 35254-106b

Area Sampled (cm²): Blank
Location: Field Blank

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
~~Non-Asbestos Structures:~~ None Detected

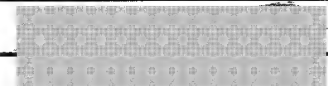

Volume Filtered (mL): 50
Dilution Factor (mL): 50
Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

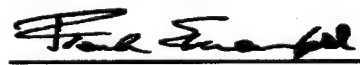
~~Asbestos Structures:~~ None Detected
Structures < 5 Microns: None Detected
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Asbestos Type(s):
None Detected

Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA
Non-Asbestos Type(s):
None Detected

Micrograph Number:
EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: 6/25/2018
Date Analyzed: 06/27/2018
Signature: 
Analyst: 

Approved By: 
Frank E. Ehrenfeld, III
Laboratory Director

Dated : 6/28/2018 6:30:56

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9000 Commerce Parkway Suite B
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.
201 - 415 Gorge Road East
Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018
Report No.: 566679 - TEM Dust Wipe
Project: CCGS Bartlett-General Hazmat Consulting
Project No.: 35254

CCGS-NGCC, Bartlett Logistics Officer

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: July-02-18 8:55 AM
To: CCGS-NGCC, Bartlett Logistics Officer
Cc: CCGS-NGCC, Bartlett Senior Engineer
Subject: FW: Deckhead Cavity ACM TEM Swipes

FYI. Historical.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Captain
Sent: June-24-18 6:01 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Subject: RE: Deckhead Cavity ACM TEM Swipes

What is the date of these tests?

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: 2018-06-24 17:51
To: CCGS-NGCC, Bartlett Captain
Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Engine Room; Chaikin Gabriel
Subject: Deckhead Cavity ACM TEM Swipes
Importance: High

Captain,

The following areas above dropped ceilings were tested for ACM using TEM Swipe:

- | | |
|--------------------------------------|--|
| 1. Upper Deck – Stb'd-Aft Alleyway : | 27,800 s/cm2 Chrysotile |
| 2. Upper Deck - Stb'd-Aft W/T Door : | 204,000 s/cm2 Chrysotile Amosite |
| 3. Aft Oilers Cabin : | 37,000 s/cm2 Chrysotile |
| 4. Logistics Office: | "none" detected |
| 5. Cadet Cabin : | "none" detected |
| 6. Bridge: | "none" detected (just below limit – 9,250 s/cm2) |

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccg-s-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

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de la Loi sur l'accès à l'information.
s.16(2)

CCGS-NGCC, Bartlett Chief Officer

From: CCGS-NGCC, Gordon Reid Captain
Sent: July-04-18 7:52 AM
To: CCGS-NGCC, Bartlett Chief Officer
Subject: Fishing for info

Ryan

The rumour mill is crazy these days with regard to Bartlett and asbestos.
I am making an effort to keep crew informed with facts as opposed to what reaches the ship from various sources.

If you have time, would you fire me back a quick e-mail on how it's going over there.

Remediation complete?
Crew on board?
Crew sleeping with no mattresses?

I would e-mail the Captain, but the sitreps aren't listing a Captain at the moment, and I know you responded to our request for Justin's PA the other day.

If you are too busy, I understand, it's not critical. Just trying to keep rumours down and facts up.

Thanks,

Nick

Nicola Mancey
Commanding Officer, CCGS Gordon Reid
Ships Cell Ships Email: ReidCO@ccgs-ngcc.gc.ca
Portable Cell
Iridium

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Captain
Sent: July-05-18 7:12 AM
To: CCGS-NGCC, Bartlett Chief Engineer; 'Jen Taptuna'
Cc: [REDACTED] CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Logistics Officer
Subject: RE: Bartlett - DOP Testing Vacs

The stick vacs spread fine dust into the air. They were targeted for removal as a health hazard anyway.
M.

Captain Michael Shuckburgh
[REDACTED] in port
[REDACTED] at sea

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: 2018-07-04 18:32
To: [REDACTED]
Cc: [REDACTED] CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Logistics Officer
Subject: RE: Bartlett - DOP Testing Vacs

OK, thanks [REDACTED] Talal, our Transport Canada inspector asked me to check on whether the Void Vent Fan has a DOP Cert. The Fan is presently on the dock and is very easily transported.

And as for the 4 Accommodation vacs that should never get used for asbestos abatement, some people are thinking that they will never intentionally be used for ACM cleanup, (except for when the ambient 9,999 s/cm2 settles onto carpets), and so it's irrelevant if they actually contain asbestos or spread exhaust back into the ambient ship air. The other argument is, if it does not matter whether or not the HEPA units pass the seal test, do we really need to use these cumbersome units rather than the much preferred stick vacs.

But we'll discuss when we see you next.

Regards.

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: July-04-18 4:38 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: [REDACTED] CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject: RE: Bartlett - DOP Testing Vacs

Hi there, generally HEPA vacuums should be tested at least annually, however, more frequent testing is recommended if they are dropped, transported long distances, or handled roughly as jolts and bumps can cause damage to filters or unseat gaskets.

I'm not sure about the fan in the void space. Some units claim to be HEPA rated, however, they are configured in such a way that they can't actually be tested (at least with our equipment). I'll take a look at it next time I'm on board.

Best,



Project Manager
North West Environmental Group Ltd.
C. [REDACTED]

From: CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca>

Sent: July 4, 2018 4:23 PM

To: [REDACTED]

Cc: [REDACTED] CCGS-NGCC, Bartlett Senior Engineer <BartlettSE@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Chief Officer <BartlettCHO@ccgs-ngcc.gc.ca>

Subject: Bartlett - DOP Testing Vacs

Importance: High

Could Day [REDACTED]

Could someone please advise us on the requirement for us to DOP test all of our HEPA Vacuum.
We have the following inventory:

1. Engine Room HEPA Vacuum - Recently DOP tested.
2. Identical Euroclean vac to above x 4 units for general purpose accommodation carpet vacuuming.
3. Deck Dustless Tool HEPA Vac (for lead paint collection etc)
4. Bridge Void Space HEPA Fan → used to create sight vacuum in ACM contaminated Bridge Void and discharge to atmosphere

Many Thanks,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: [REDACTED]

BartlettCE@bar.ccs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

CCGS-NGCC, Bartlett Captain

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: July-09-18 5:00 PM
To: [REDACTED]
Cc: [REDACTED]; 'George Kohorst'; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse
Subject: FW: Bartlett WH Consoles
Importance: High

Please continue to record ambient air sample on Bridge every day that George / KOHO is working on the Bridge Electronic Cabinets. (... Even if that is every day for the next 3 weeks).

Many Thanks,

Ross McKenzie
Chief Engineer, CCGS Bartlett
Cell: [REDACTED]
BartlettCE@bar.ccs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: July-06-18 11:03 AM
To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Senior Engineer
Cc: Chaikin Gabriel; [REDACTED]
Subject: Bartlett WH Consoles

Good afternoon, below is a short work procedure for George's work in the WH consoles. I confirmed that an enclosure is not required (moderate risk, proven air flow through the consoles when using the negative air unit (NAU)).

1. Place a drop sheet on the floor around the work area. Place Asbestos Barrier tape approx. 6 ft around the work area. Unprotected workers are not permitted within the barrier.
2. Install the NAU, duct out of a front window. Keep adjacent windows closed when running the NAU. Plug or seal penetrations into the void space to ensure that air drawn into the consoles is fresh air from the WH.
3. Using brushes and a certified HEPA vacuum, clean all surfaces within consoles (cables, trays, metal surfaces, etc.), top to bottom, and working towards the NAU (going the opposite direction will cause cleaned surfaces to be re-contaminated as dust blows past them into the NAU).
4. Using brushes and HEPA vacuum, unbundle cables, cleaning continuously.
5. Using Baby wipes or similar, wipe smooth cables.
6. HEPA vacuum braided and textile cables. Turn the NAU off and apply an approved encapsulant. Allow to dry.
7. Conduct other work in a similar fashion (i.e. continuous cleaning, encapsulation): cable cutting, replacing equipment, etc.

NWest will be on site for 8:30 Monday morning to collect an Occupational samples. An ambient is not required – let me know if you want to do one though.

Let me know if you have any questions or concerns.

Best,

[REDACTED]
Project Manager
North West Environmental Group Ltd.



#201 – 415 Gorge Road East
Victoria, B.C. V8T 2W1

C: [REDACTED]
O: (250) 384-9695 ext. [REDACTED]

The information contained in this email message is privileged and confidential information intended only for the use of the party named above. If you have received this communication in error, please notify the author and delete the message from your system. Your cooperation is appreciated.

Ayres, Bob

From: CCGS Sir Wilfrid Laurier - Logistics <LaurierLO@swl.ccs-ngcc.gc.ca>
Sent: Tuesday, July 10, 2018 7:35 AM
To: Ayres, Bob
Subject: RE: Procedure for Reporting Asbestos Exposure

Thanks Bob

For those who served aboard "Provo Wallis" on this coast that information will be welcome.

Cheers,

Miles

Miles G. Taylor

Logistics Officer
CCGS Sir Wilfrid Laurier
Email: LaurierLO@swl.ccs-ngcc.gc.ca
Large attachments to: swlaurierlo@gmail.com
Cell: [REDACTED]
Landline: 1-250-480-2694
Globalstar: [REDACTED]
Iridium Voice: [REDACTED]
Fleet Broadband: [REDACTED]
Tellular: [REDACTED]

From: Ayres, Bob [<mailto:Bob.Ayres@dfo-mpo.gc.ca>]
Sent: Tuesday, July 10, 2018 7:32 AM
To: CCGS Sir Wilfrid Laurier - Logistics
Subject: RE: Procedure for Reporting Asbestos Exposure

Great – thank you.

P.S. Regarding the Provo – I asked a Fleet Manager about that and was advised that the Provo was reported to have had a full asbestos remediation during her lengthening – if that makes a difference.

From: CCGS Sir Wilfrid Laurier - Logistics <LaurierLO@swl.ccs-ngcc.gc.ca>
Sent: Tuesday, July 10, 2018 7:26 AM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: RE: Procedure for Reporting Asbestos Exposure

Good morning Bob

Thank you for forwarding the bulletin.

Confirmed – it was received and posted on or about June 22. Because I couldn't find the electronic version I wasn't certain that it had been received.

Thanks again.

Miles

Miles G. Taylor

Logistics Officer

CCGS Sir Wilfrid Laurier

Email: LaurierLO@swl.ccgsg-ngcc.gc.ca

Large attachments to: swlaurierlo@gmail.com

Cell: [REDACTED]

Landline: 1-250-480-2694

Globalstar: [REDACTED]

Iridium Voice: [REDACTED]

Fleet Broadband: [REDACTED]

Tellular: [REDACTED]

From: Ayres, Bob [<mailto:Bob.Ayres@dfo-mpo.gc.ca>]

Sent: Tuesday, July 10, 2018 6:34 AM

To: CCGS Sir Wilfrid Laurier - Logistics

Subject: RE: Procedure for Reporting Asbestos Exposure

Good morning Miles.

Here is bulletin. If you don't mind could you confirm this was received by the ship, and ideally posted? It should have been distributed by the ROC on June 21 or 22.

Thanks very much,

Bob

From: CCGS Sir Wilfrid Laurier - Logistics <LaurierLO@swl.ccgsg-ngcc.gc.ca>

Sent: Monday, July 9, 2018 6:13 PM

To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>

Subject: RE: Procedure for Reporting Asbestos Exposure

Hi Bob

Thank you for the prompt reply to my query.

I'm unable to locate the bulletin you refer to. Would you kindly have it forwarded to me.

Thank you for your assistance.

Best regards,

Miles

Miles G. Taylor

Logistics Officer

CCGS Sir Wilfrid Laurier

Email: LaurierLO@swl.ccgsg-ngcc.gc.ca

Large attachments to: swlaurierlo@gmail.com

Cell: [REDACTED]

Landline: 1-250-480-2694

Globalstar: [REDACTED]

Iridium Voice: [REDACTED]

Fleet Broadband: [REDACTED]

Tellular: [REDACTED]

From: Ayres, Bob [<mailto:Bob.Ayres@dfo-mpo.gc.ca>]

Sent: Monday, July 09, 2018 4:30 PM

To: CCGS Sir Wilfrid Laurier - Logistics

Subject: RE: Procedure for Reporting Asbestos Exposure

Hello Miles,

The recommended method for reporting is as per the bulletin that was sent out and that is to submit electronically to Worksafe BC via the Exposure Registry. Worksafe then keeps this on permanent record in case of any future need to reference for a work related claim.

There is not a need to send separate record to CG management. Worksafe apparently sends by mail a confirmation to both the originator and the employer (we are recommending that be DFO as per the address in part 6 of the bulletin).

I don't have any information on Provo right at hand but by the age of that ship I would say it most likely also has/had asbestos, as does other of our older ships.

I would recommend that anyone with concerns consider the Exposure Registry as the preferred method of documenting and if doing so, indicate on the form a summary of work (type of work that may have resulted in exposure, frequency, duration, etc.) on ships with asbestos to document potential exposure.

Regards,
Bob

Bob Ayres

Manager, Coast Guard Safety and Security

Canadian Coast Guard - Western Region

25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636

Cell: [REDACTED]

E-mail: bob.ayres@dfo-mpo.gc.ca

From: CCGS Sir Wilfrid Laurier - Logistics <LaurierLO@swl.ccg-s-ngcc.gc.ca>

Sent: Monday, July 9, 2018 2:38 PM

To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>

Subject: FW: Procedure for Reporting Asbestos Exposure

Good afternoon Bob

I hope this finds you well.

Further to the discussion regarding the "Bartlett" and associated asbestos exposure.

Would you kindly advise the avenue by which personnel are to report any career asbestos exposure. To CCG management, Work Safe (WCB) etc.

Has there been any association for "CCGS Provo Wallis" to the question of asbestos exposure?

Thank you for your assistance.

Best regards,

Miles

Miles G. Taylor

Logistics Officer

CCGS Sir Wilfrid Laurier

Email: LaurierLO@swl.ccgsgc.gc.ca

Large attachments to: swlaurierlo@gmail.com

Cell: [REDACTED]

Landline: 1-250-480-2694

Globalstar: [REDACTED]

Iridium Voice: [REDACTED]

Fleet Broadband: [REDACTED]

Tellular: [REDACTED]

Ayres, Bob

From: Ayres, Bob
Sent: Wednesday, July 11, 2018 10:49 AM
To: [REDACTED]
Subject: RE: Asbestos claims - [REDACTED]
Attachments: Western Region Safety Bulletin - Asbestos and Lead Paint June 21.pdf

Hi [REDACTED]

The Regional Safety Bulletin that was sent out on June 22nd includes advice on how to document. Best to submit electronically – the link is in part 6 of the bulletin.

I should also clarify that it's not a matter at this point of submitting a claim, as a claim would only be made if there is an illness or identified health effect, but rather documenting that you worked in an environment with a known hazard and potentially were exposed. Important to note regarding the Bartlett is that all of the air monitoring done to date has indicated no detectable or quantifiable asbestos in the air.

Please feel free to contact me if any questions,
Bob

Bob Ayres

Manager, Coast Guard Safety and Security
Canadian Coast Guard - Western Region
25 Huron Street, Victoria BC, V8V 4V9
Office: 250-480-2636
Cell: [REDACTED]
E-mail: bob.ayres@dfo-mpo.gc.ca

From: [REDACTED]
Sent: Tuesday, July 10, 2018 8:03 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: Asbestos claims - [REDACTED]

Good evening,

I was wondering what the process is to submit a claim with regards to asbestos since I was on the Bartlett for about 3 years.

Thank you,
[REDACTED]

**Pages 1510 to / à 1513
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pages 1548 to / à 1551**

Labelle-Rice, Roxane

From: Richardson, John
Sent: July-17-18 3:33 PM
To: DeAngelis, Vincenzo
Cc: Harvey, Clifford
Subject: RE: Asbestos Mitigation and Management - Bartlett

Wondering if a consult with www.worksafebc.com might be helpful in determining a way forward?

John

From: Richardson, John
Sent: 2018-July-17 3:18 PM
To: Harvey, Clifford; DeAngelis, Vincenzo
Subject: RE: Asbestos Mitigation and Management - Bartlett

Will speak with Vince about this but obviously it is a delicate topic. With all the air sampling done I don't believe they ever had any indication of asbestos fibres therefore meeting the reg requirements, but I can understand that crewmembers would be concerned, and I'm not sure how best to convince them that they are safe.

From: Harvey, Clifford
Sent: 2018-July-17 3:11 PM
To: DeAngelis, Vincenzo; Richardson, John
Subject: FW: Asbestos Mitigation and Management - Bartlett
Importance: High

Can we have a discussion, would like to see how we can support Cliff on the west coast.

Cliff

Clifford Harvey

From: Hunt, Cliff
Sent: Monday, July 16, 2018 7:55 PM
To: Harvey, Clifford <Clifford.Harvey@dfo-mpo.gc.ca>
Subject: Asbestos Mitigation and Management - Bartlett

Cliff,

The SME contractors will only recommend courses of action. They won't or can't say when mitigation has been deemed to be complete. And apparently Health Canada isn't definitive either on the matter.

My question to you is do we have subject matter experts on methods and standards in CCG? Perhaps experienced engineers or project managers who have already been through this process on other CCG vessels.

Any help or advice you can provide would be appreciated.

Cliff Hunt

Regional Director
Integrated Technical Services
Canadian Coast Guard
Western Region
Phone (250) 480-2762
Cell [REDACTED]

Labelle-Rice, Roxane

From: Hunt, Cliff
Sent: July-18-18 7:07 PM
To: Harvey, Clifford
Subject: RE: Asbestos Mitigation and Management - Bartlett

That is great information. I think we have the testing and ongoing monitoring piece sorted out but I may ask RD Fleet if she is interested in the training component or any of the documentation that was developed.

Really appreciate your support on this.

Cliff

From: Harvey, Clifford
Sent: Wednesday, July 18, 2018 4:02 PM
To: Hunt, Cliff <Cliff.Hunt@dfo-mpo.gc.ca>
Subject: Re: Asbestos Mitigation and Management - Bartlett

We actually discussed this at our its/ops meeting today. Based on the discussion today I was going to suggest that we have Pinchin LeBlanc hired to revisit the training for the crew onboard, and perform testing if required. This company was involved intimately when the issue was being addressed 15-20 years ago, and may have actually have developed most of our existing documentation.

We'll stand down for now, but if you need some support please do let me know.

Cheers,

Cliff

Clifford Harvey

From: Hunt, Cliff
Sent: Wednesday, July 18, 2018 6:53 PM
To: Harvey, Clifford
Subject: RE: Asbestos Mitigation and Management - Bartlett

We may have wrestled things back under control.

I think we are good for now.

Thanks

Cliff

From: Harvey, Clifford
Sent: Monday, July 16, 2018 5:27 PM
To: Hunt, Cliff <Cliff.Hunt@dfo-mpo.gc.ca>
Subject: Re: Asbestos Mitigation and Management - Bartlett

Cliff,

Been some time since i dealt with asbestoa the last time i was in CG. I am surprised its still an issue.

I will ask the team tomorrow and see how we can provide support.

Will get back tomorrow.

Cliff

Get Outlook for Android

From: Hunt, Cliff
Sent: Monday, July 16, 7:54 PM
Subject: Asbestos Mitigation and Management - Bartlett
To: Harvey, Clifford

Cliff,

SME contractors will only recommend courses of action. They won't or can't say when mitigation has been deemed to be complete. And apparently Health Canada isn't definitive either on the matter.

My question to you is do we have subject matter experts on methods and standards in CCG? Perhaps experienced engineers or project managers who have already been through this process on other CCG vessels.

Any help or advice you can provide would be appreciated.

Cliff Hunt

Regional Director
Integrated Technical Services
Canadian Coast Guard
Western Region
Phone (250) 480-2762
Cell [REDACTED]

Labelle-Rice, Roxane

s.21(1)(b)

From: DeAngelis, Vincenzo
Sent: July-18-18 6:31 AM
To: Harvey, Clifford; Richardson, John
Subject: RE: Asbestos Mitigation and Management - Bartlett

Good morning Cliff and John,

I can call you both just before lunch or this afternoon to discuss

Best Regards,

Vince

Vince De Angelis
Marine Engineering | Ingénierie Navale
Integrated Technical Services | Services Techniques Intégrés
Canadian Coast Guard | Garde Côtière Canadienne
200 Kent Street, Office | Bureau 7W077
Ottawa, ON, K1A 0E6
vincenzo.deangelis@dfo-mpo.gc.ca
Telephone | Téléphone 613-219-2733

From: Harvey, Clifford
Sent: Tuesday, July 17, 2018 3:11 PM
To: DeAngelis, Vincenzo <Vincenzo.DeAngelis@dfo-mpo.gc.ca>; Richardson, John <John.Richardson@dfo-mpo.gc.ca>
Subject: FW: Asbestos Mitigation and Management - Bartlett
Importance: High

Can we have a discussion, would like to see how we can support Cliff on the west coast.

Cliff

Clifford Harvey

From: Hunt, Cliff
Sent: Monday, July 16, 2018 7:55 PM

To: Harvey, Clifford <Clifford.Harvey@dfo-mpo.gc.ca>
Subject: Asbestos Mitigation and Management - Bartlett

Cliff,

[REDACTED] The SME contractors will only recommend courses of action. They won't or can't say when mitigation has been deemed to be complete. And apparently Health Canada isn't definitive either on the matter.

My question to you is do we have subject matter experts on methods and standards in CCG? Perhaps experienced engineers or project managers who have already been through this process on other CCG vessels.

Any help or advice you can provide would be appreciated.

Cliff Hunt

Regional Director
Integrated Technical Services
Canadian Coast Guard
Western Region
Phone (250) 480-2762
Cell [REDACTED]

Ivanisevic, Lynda

From: Ivanisevic, Lynda
Sent: 2018-July-18 9:52 AM
To: [REDACTED]
Subject: RE: FW: Pay Question

Absolutely. We are working on a next training date as we speak. I will ensure you are included for future consideration. If when you join the ship you complete a PA and discuss training, please ensure it is included in your learning plan.

Any other questions, please do not hesitate to contact me.

Lynda Ivanisevic
Supervisor Seagoing Personnel
Canadian Coast Guard
Email: Lynda.Ivanisevic@dfo-mpo.gc.ca
Telephone: (250) 480-2750

From: [REDACTED]
Sent: 2018-July-18 9:50 AM
To: Ivanisevic, Lynda
Subject: Re: FW: Pay Question

Hi Lynda,

Thanks for getting back to me. I appreciate the quick response. It does address my concerns. I would love to be included on any future training if it becomes available, I'm sure I will receive the necessary familiarization when I arrive on board.

Thanks again,
[REDACTED]

On Jul 18, 2018 09:17, "Ivanisevic, Lynda" <Lynda.Ivanisevic@dfo-mpo.gc.ca> wrote:

Hi [REDACTED]

As outlined in the attached CCG Western Region – Regional Fleet Bulletin, the “potential” for exposure to asbestos has been minimal and ongoing monitoring/testing has identified these risks as minimal. Through a comprehensive analysis of samples obtained from the ship, although the presence of asbestos has been confirmed in certain areas (residual dust wipe samples), there has been no indicators that positively identify the presence of “airborne friable asbestos” on the ship. Ongoing control and monitoring measures are in place to ensure the health and safety of all CCG employees. Health Canada and the environmental consultants, together with the results of air monitoring, have provided CCG with confidence to operationalize the ship with little to no risk to our personnel.

s.19(1)

I am looking to see whether further training is being offered for the crew, but regardless, I am sure there will be discussions and familiarisation provided on board the vessel when you join.

Does this address your concerns?

Lynda Ivanisevic

Supervisor Seagoing Personnel

Canadian Coast Guard

Email: Lynda.Ivanisevic@dfo-mpo.gc.ca

Telephone: (250) 480-2750

From: Harding, Ashleigh
Sent: 2018-July-18 8:53 AM
To: Ivanisevic, Lynda
Subject: FW: Pay Question

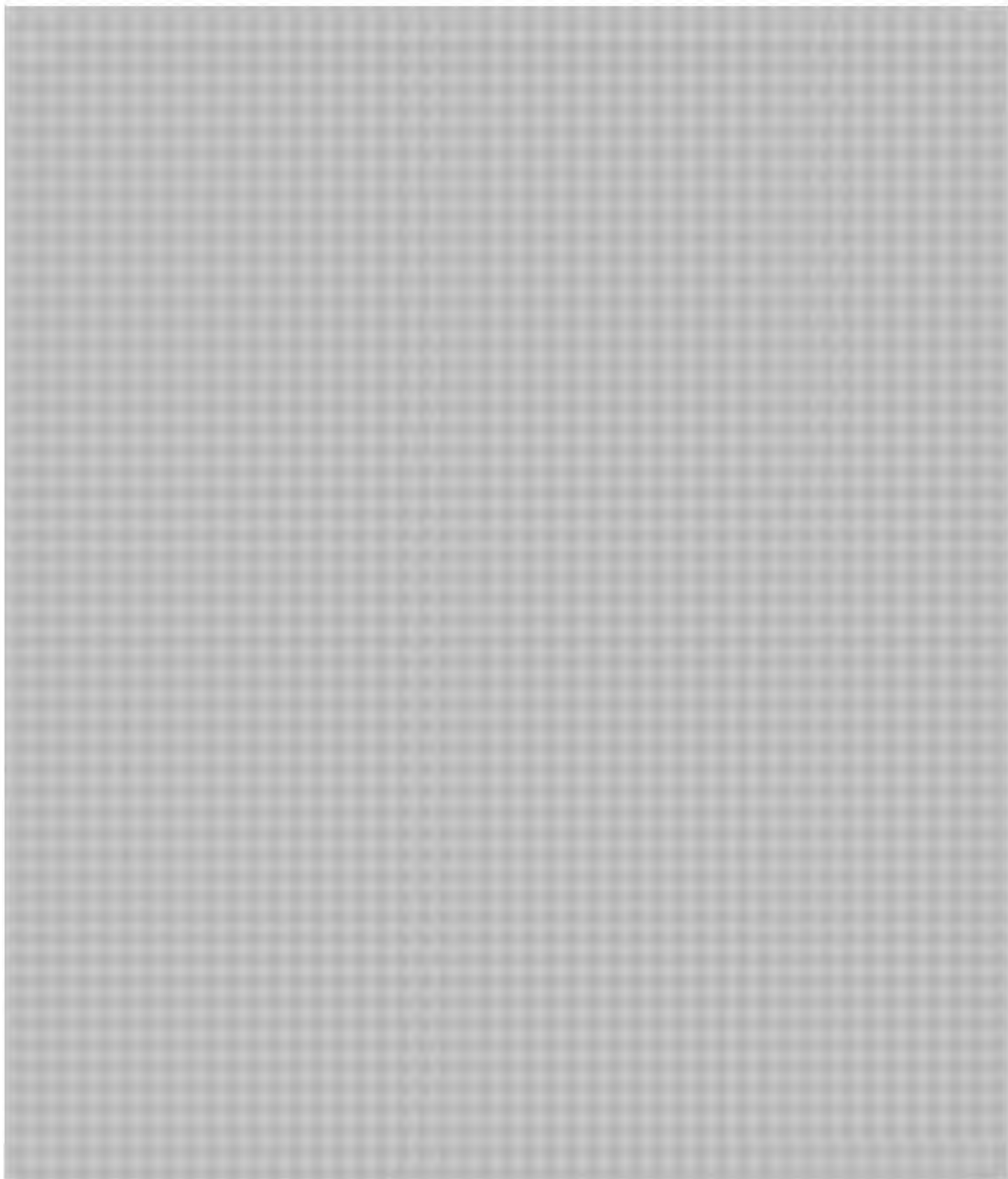
Hi Lynda,

Please see below.

From: [REDACTED]
Sent: Tuesday, July 17, 2018 10:00 PM
To: Harding, Ashleigh <Ashleigh.Harding@dfo-mpo.gc.ca>
Subject: Re: Pay Question

Hi Ashleigh,

Yes, I have seen that already. Just worried a bit about the condition of the ship. The latest IIR that was sent out showed that asbestos dust was found in the third officer cabin, and this comes just shortly after an email stated that remediation has occurred and showed negative for asbestos. I'm curious what this means and what I can do if I suspect asbestos as I have no formal training in the matter.



**Pages 1523 to / à 1527
are withheld pursuant to section
sont retenues en vertu de l'article**

19(1)

**of the Access to Information Act
de la Loi sur l'accès à l'information**

Ivanisevic, Lynda

From: Ivanisevic, Lynda
Sent: 2018-July-18 8:18 AM
To: [REDACTED]
Cc: Rolinski, Regina; Smith, Mike
Subject: FW: Crew Change
Attachments: Western Region Safety Bulletin - Asbestos and Lead Paint June 21.pdf

[REDACTED] your email has been provided to me for a response.

As outlined in the attached CCG Western Region – Regional Fleet Bulletin, the “potential” for exposure has been minimal and ongoing monitoring/testing has identified these risks as minimal. Through a comprehensive analysis of samples obtained from the ship, although the presence of asbestos has been confirmed in certain areas (residual dust wipe samples), there has been no indicators that positively identify the presence of “airborne friable asbestos” on the ship. Ongoing control and monitoring measures are in place to ensure the health and safety of all CCG employees. Health Canada and the environmental consultants, together with the results of air monitoring, have provided CCG with confidence to operationalize the ship with little to no risk to our personnel and as such there should be no expectation that personnel will need to be accommodated by switching crews/ships. If it was unsafe for a particular person, then it would be unsafe for all employees and that would be unacceptable to CCG.

As per the bulletin, I would encourage any personnel who feel they may have been potentially exposed to register in the BC Exposure WorkSafe Program, ensure they submit an incident report to Health Canada for their personnel medical file, and consult with their personal physician regarding any exposure history and personal health risks.

At this time due to operational needs, we have you scheduled to return to the Bartlett. Your experience is required to ensure safe operations and to ensure the crewing profiles are maintained.

Please feel free to contact me if you have any further concerns.

Lynda Ivanisevic
 Supervisor Seagoing Personnel
 Canadian Coast Guard
 Email: Lynda.Ivanisevic@dfo-mpo.gc.ca
 Telephone: (250) 480-2750

From: Rolinski, Regina
Sent: 2018-July-09 7:41 AM
To: Ivanisevic, Lynda
Subject: FW: Crew Change

From: [REDACTED]
Sent: July-09-18 3:09 AM
To: Rolinski, Regina <Regina.Rolinski@dfo-mpo.gc.ca>
Subject: Re: Crew Change

Regina,

To be honest, I don't feel comfortable coming back to the Bartlett at this time due to the reports of unacceptable levels of friable airborne asbestos and asbestos dust on horizontal surfaces throughout the ship.

I have read the fleet wide bulletin on the subject but feel it leaves to many unanswered questions. I am not convinced it is unsafe but I'm not at all convinced that it is.

The fact that I sailed on the Bartlett for nearly 3 years with these levels going unreported tells me I may have suffered irreversible damage to my health and gives me some degree of anxiety.


I am requesting to transfer to a vessel where I can feel safe and free of the stress of not knowing if my health is at risk. If at all possible I would like to return to the Gordon Reid.

I feel poorly in leaving the crew of the Bartlett in their program but I put myself first in this situation.

Sorry for making this difficult for you but this is how I currently feel.

On Jul 5, 2018 10:30 AM, "Rolinski, Regina" <Regina.Rolinski@dfo-mpo.gc.ca> wrote:

Hello 

I talked to Ryan Gurr this week and he is requesting that you return to the Bartlett for the August 8th patrol. The ship is short on experienced deck hands and does not feel that now is the right time to lose you. I am happy to work with you and the ship to make the move happen for you though that may be once the Laurier is in her VLE this winter. I know it's not what you were hoping for .

Regina

Regina Rolinski

Crewing Officer

Seagoing Personnel

25 Huron Street

Victoria, BC

250-480-2776



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pages 1548 to / à 1551**



WORKING TO MAKE A DIFFERENCE

Worker and Employer Services Division

Mailing Address

PO Box 5350 Stn Terminal
Vancouver BC V6B 5L5

Location

6951 Westminster Highway
Richmond BC

www.worksafebc.com

Telephone 604 276-3100

Toll-free within BC 1 888 621-7233

Prevention Records

Direct Line: 604 276-3231 FAX: 604 276-3292

July 18, 2018

Canadian Coast Guard
25 Huron Street
Victoria BC V8V 4Z9
Canada

Dear :

Re: Notification of Occupational Exposure Incident

WorkSafeBC maintains a voluntary exposure registry as a way for workers, employers, and others to register a worker's exposure to a harmful substance at work.

Please be advised that an occupational exposure incident was registered with WorkSafeBC. The details of the incident are on the attached exposure registry form.

If you have further information about the incident, please complete a separate exposure registry form. (You'll find it on the WorkSafeBC website at <http://www.worksafebc.com/forms/assets/pdf/41M1.pdf>). Additional questions regarding the registry form should be directed to Prevention Records at 604 276-3231.

WorkSafeBC will retain all the information provided on these forms as a permanent record of the worker's exposure.

c.c.: worker, employer

Enclosures

**Pages 1536 to / à 1540
are withheld pursuant to section
sont retenues en vertu de l'article**

19(1)

**of the Access to Information Act
de la Loi sur l'accès à l'information**

Ayres, Bob

From: Ayres, Bob
Sent: Thursday, July 19, 2018 4:09 PM
To: Richardson, Dena
Subject: RE: Please update Bob
Attachments: Bartlett one pager July 19 2018.docx

Hi Dena,
As discussed, attached is a fresh summary.

[REDACTED] feel free to ask if any questions.

Bob

From: Richardson, Dena
Sent: Thursday, July 19, 2018 8:02 AM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: Please update Bob

Hi Bob,

The Commissioner is asking for an update on the Bartlett, this is the one pager that I prepared for NPHSC. Can you please take a look at it and update it for me? He is asking for it by CoB today. I'm sorry.

I took the majority of info from the Safety Bulletin you prepared because it was for NPHSC, but please include any details that you may have as it relates to the progress in the asbestos abatement / containment or any other piece of information that you feel is relevant.

Thanks,
Dena

Dena Richardson

Director, CG Safety & Security Branch
Canadian Coast Guard / Government of Canada
Dena.richardson@dfo-mpo.gc.ca / Tel: 613-990-3375
Blackberry: [REDACTED]

Directrice, Direction de la Sécurité et sûreté de la GC
Garde côtière canadienne / Gouvernement du Canada
Dena.richardson@dfo-mpo.gc.ca / Tél : (613) 990-3375
Blackberry: [REDACTED]
/

The CCGS Bartlett, like other ships of the era (1969) was constructed with asbestos containing materials (ACM). While there is a long history of asbestos surveys and remediation efforts, findings in February of 2018 led to additional planned remediation for the May/June refit. Follow-up testing led to further findings in dust wipe tests and an immediate decision to stop all work with potential to disturb ACM.

Positive test results included dust wipes in a variety of areas including wire-ways, deck-heads and other areas on the ship. A notable and later finding was of high concentrations of asbestos structures in the ship's stack, which presented particular challenges to remediation and ultimately resulted in a decision to encapsulate in that area. While initial samples from the ventilation ducts showed negative, subsequent testing did find some asbestos structures in the ducting and this will also be addressed.

An asbestos remediation contractor was engaged to conduct a thorough cleaning of suspect areas and finalize a plan to encapsulate material in identified areas. Importantly, air monitoring on the ship in a variety of locations, times and operating states, including prior the start of cleaning efforts, have all resulted in results either below the limit of detection or below the limit of quantitation for asbestos.

Significant efforts continue to be made by CCG Fleet, Marine Engineering, support personnel and contractors. As of July 19th the remediation, cleaning and encapsulation is progressing well and is on track for completion by the projected end of refit July 27th.

The priority throughout has been on the health and safety of personnel.

- Environmental consultant (Northwest Environmental) contracted to conduct a comprehensive regime of sampling and to audit remediation work. This sampling continues and will include air monitoring on an on-going basis even once the ship returns to program.
- Specialist contractor (Quantum Murray) hired to conduct cleaning and encapsulation.
- CG crews were moved off ship during the most intensive of the cleaning efforts and potentially suspect soft materials, including bedding, mattresses and some furnishings replaced.
- The Health Canada Occupational Health Medical Officer was engaged from the outset.
- Crews briefed as to status from the outset. This included two separate sessions with the Health Canada physician and consultants. These sessions included briefing of known information and provided an opportunity for question and answer to both Fleet and shore-based personnel.
- A Regional Safety Bulletin was distributed to all Fleet and all CCG in region. This bulletin included background to the issue, a summary of workplace controls and options for health and exposure documentation.
- The Fleet Safety Manual 7.A.10 provides guidance to ships with ACM and includes the requirement for a Vessel Specific Asbestos Management Plan (VSAMP). This is in place on the Bartlett.
- Additional training in Asbestos Awareness and Abatement has been targeted to Bartlett crews and to personnel of other ships with ACM and appropriate shore-based personnel.

Refit and remediation is projected to finish by July 27th or shortly thereafter, to be followed by two days of Transport Canada inspections and then sea trials. The next crew change is set for August 8th and the Bartlett is to resume a full program of work at that time.

s.19(1)

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Smith, Mike

From: Ivanisevic, Lynda
Sent: 2018-July-19 11:30 AM
To: [REDACTED]
Cc: Smith, Mike; Jersch, Russell
Subject: FW: Bartlett
Attachments: Western Region Safety Bulletin - Asbestos and Lead Paint June 21.pdf

Hi [REDACTED]

Your email has been provided to me for a response.

As outlined in the attached CCG Western Region – Regional Fleet Bulletin, the “potential” for exposure has been minimal and ongoing monitoring/testing has identified these risks as minimal. Through a comprehensive analysis of samples obtained from the ship, although the presence of asbestos has been confirmed in certain areas (residual dust wipe samples), there has been no indicators that positively identify the presence of “airborne friable asbestos” on the ship. Ongoing control and monitoring measures are in place to ensure the health and safety of all CCG employees. Health Canada and the environmental consultants, together with the results of air monitoring, have provided CCG with confidence to operationalize the ship with little to no risk to our personnel and as such there should

be no expectation that personnel will need to be accommodated by switching crews/ships. If it was unsafe for a particular person , then it would be unsafe for all employees and that would be unacceptable to CCG.

At this time, your next assignment will remain on the Bartlett.

Please feel free to contact our office should you have any further questions.

Lynda Ivanisevic
Supervisor Seagoing Personnel
Canadian Coast Guard
Email: Lynda.Ivanisevic@dfo-mpo.gc.ca
Telephone: (250) 480-2750

From: Harding, Ashleigh
Sent: 2018-July-19 11:05 AM
To: Ivanisevic, Lynda
Subject: FW: Bartlett

FYI - Another asbestos concern.

From: [REDACTED]
Sent: July-19-18 11:02 AM

Things have gone well here on the Tully. I've heard rumors, as is always the case on coast guard ships, and just wanted to confirm that you do want me to leave the Tully on the 17th and head to the Bartlett. The internet has not been working reliably so I'll make sure I check for emails before leaving on Tuesday morning.

Thank you,

No information has been removed or severed from this page

6

To: Harding, Ashleigh
Subject: Bartlett

Hi Asheigh,

I'm guessing I'm not too far from you right now. I'm here on the Bartlett. I hoping to find some time to pop by today and drop some stuff off and meet some people in the officer. Just wanted to drop you and line before it's too late to inquire about my next shift following this one. I'll be honest with you, I do like the Bartlett but the asbestos does cause me concern. If it is at all possible that I could be placed on another ship following this shift, I would appreciate it.

Thank you,

From: Harding, Ashleigh [<mailto:Ashleigh.Harding@dfo-mpo.gc.ca>]
Sent: July-16-18 11:01 AM
To: [REDACTED]
Subject: [REDACTED] Crew Change to the Bartlett -

Perfect, [REDACTED] but will be in the office on Tuesday's and Thursday's. Hopefully I will get a chance to meet you and It will work for you to come in for a quick tour of the office.

3

001545

Cheers,
Ashleigh

From: [REDACTED]
Sent: Monday, July 16, 2018 10:56 AM
To: Harding, Ashleigh <Ashleigh.Harding@dfo-mpo.gc.ca>
Subject: [REDACTED]: Crew Change to the Bartlett -

Good Morning Ashleigh,

[REDACTED]

Thank you for the confirmation. I`ll be making my way to the Bartlett tomorrow. With the time alongside I`m sure I`ll have time to stop by the office and say hello.

Thank you,

[REDACTED]

From: Harding, Ashleigh [Ashleigh.Harding@dfo-mpo.gc.ca]
Sent: July 16, 2018 2:51 PM
To: [REDACTED]
Cc: CCGS-NGCC, JohnPTully Wheelhouse
Subject: [REDACTED]: Crew Change to the Bartlett -

4

Hi [REDACTED]

[REDACTED]

I am glad everything is going well on the Tully.

Yes, please join the Bartlett tomorrow. I spoke with the Chief Officer today and he said they are set up and expecting you. The Bartlett is not sailing until after the 27th but they will have time to teach you the work boat.

Please confirm receipt, and I have copied the Tully in case you are out of service.

Thank you,
Ashleigh

s.19(1)

From: [REDACTED]
Sent: Thursday, July 12, 2018 6:55 AM
To: Harding, Ashleigh <Ashleigh.Harding@dfo-mpo.gc.ca>
Subject: Crew Change to the Bartlett

Hi Ashleigh,

Cheers,
Ashleigh

From: [REDACTED]
Sent: Monday, July 16, 2018 10:56 AM
To: Harding, Ashleigh <Ashleigh.Harding@dfo-mpo.gc.ca>
Subject: [REDACTED] Crew Change to the Bartlett -

Good Morning Ashleigh,

[REDACTED]

Thank you for the confirmation. I`ll be making my way to the Bartlett tomorrow. With the time alongside I`m sure I`ll have time to stop by the office and say hello.

Thank you,

[REDACTED]

From: Harding, Ashleigh [Ashleigh.Harding@dfo-mpo.gc.ca]
Sent: July 16, 2018 2:51 PM
To: [REDACTED]
Cc: CCGS-NGCC, JohnPTully Wheelhouse
Subject: [REDACTED] Crew Change to the Bartlett -

4

Hi Fred,

[REDACTED]

I am glad everything is going well on the Tully.

Yes, please join the Bartlett tomorrow. I spoke with the Chief Officer today and he said they are set up and expecting you. The Bartlett is not sailing until after the 27th but they will have time to teach you the work boat.

Please confirm receipt, and I have copied the Tully in case you are out of service.

Thank you,
Ashleigh

From: [REDACTED]
Sent: Thursday, July 12, 2018 6:55 AM
To: Harding, Ashleigh <Ashleigh.Harding@dfo-mpo.gc.ca>
Subject: Crew Change to the Bartlett

Hi Ashleigh,

Canadian Coast Guard – Western Region

REGIONAL SAFETY BULLETIN

Hazardous Materials – Asbestos, Lead Paint

1. Issue

Increased awareness for both Fleet and Shore-Based employees as to the presence of asbestos containing materials (ACM) and lead paint in older CCG ships and structures as a result of recent findings on the *CCGS Bartlett*.

2. Target Audience

Canadian Coast Guard personnel, most notably those with potential exposure to hazardous materials, specifically asbestos and lead paint, in the course of their work.

3. Purpose of Bulletin

The purpose of this bulletin is to inform employees of the potential of these hazardous materials in many of our workplaces, identify the risks and mitigation measures, provide information, identify appropriate controls and to outline options for documentation of potential exposure.

4. Background

Asbestos and lead are present in our work environment, particularly in ships and buildings constructed prior to about 1990.

Asbestos refers to six naturally occurring fibrous minerals. Its desirable properties include that it greatly increases the tensile strength of materials, and is an excellent insulator against noise, heat and fire. These properties supported its use for many years in a number of different commercial and industrial settings, as well as in a wide range of consumer products. As long as asbestos is tightly bound within materials or encapsulated, it poses no significant health risk. If disturbed and reduced to a friable state such that it becomes airborne and is inhaled it may pose long-term health risks.

Lead in paint improves drying time, durability, appearance and moisture resistance. If ingested or inhaled lead can accumulate in the body and may cause a variety of ill health affects, with particular developmental risk to young children.

As awareness has grown over the associated health risks, the allowable limits (thresholds) of asbestos and lead in construction and consumer products has decreased substantially. The current approach is now very cautious and strict requirements for warning labels are in place. In some cases, ships

Canadian Coast Guard – Western Region

previously surveyed as asbestos free, are now considered to have asbestos. Likewise, allowable levels of lead in paint have been decreasing over time and since 2010, any paint with greater than 0.009% lead must be labelled as such. Older paint coatings may very well contain lead levels above the current threshold.

The CCG continues to take significant efforts at asbestos management, including regular surveys of our ships and remediation or encapsulation of ACM where appropriate. In the recent case on the *CCGS Bartlett*, a comprehensive regime of sampling has been undertaken to provide a broader analysis of risk. This has included bulk material samples of wiring and other potential sources, dust wipe samples throughout suspect areas and air sampling throughout the ship at various times. Samples of suspect materials confirmed the presence of asbestos in certain specific wiring and in dusts in a variety of locations. It is probable, that in some cases at least, these dusts were residual from previous remediation efforts when cleaning standards were less rigorous than today. An asbestos remediation contractor is now conducting a thorough cleaning of suspect areas and finalizing a plan to encapsulate material in identified areas. Importantly, air monitoring on the ship in a variety of locations, times including prior the recent cleaning efforts, and operational states have all resulted in results either below the limit of detection or below the limit of quantitation for asbestos. Samples from the ventilation ducts also showed negative for asbestos.

Discussions with the Health Canada Occupational Health Medical Officer and environmental consultants are ongoing and these, in conjunction with the results of air monitoring, have provided CCG with confidence that the risk to personnel from asbestos in the current state should be considered to be very low. The greatest risk of asbestos related disease would be from work involving significant prolonged exposure to high concentrations of air-borne asbestos fibres and that is not indicated in our circumstances. That being said the CCG still maintains a cautious approach and will continue to work with specialists and will monitor, including air sampling, on an ongoing basis.

5. Workplace Controls

The presence of known or suspected hazards in the workplace require that risk assessments be completed and controls implemented to reduce risks to an acceptable level. Controls for both asbestos and lead share similar principles including;

- elimination (removal) or substitution of the hazard where prudent,
- engineering controls such as encapsulation,
- administrative controls such as management plans, training and familiarization, procedures and safe work instructions,
- appropriate use of personal protective equipment (PPE) where work is to be performed that may expose workers to hazardous materials.

For CCG ships with asbestos the Fleet Safety Manual 7.A.10, Handling and Containing Asbestos Materials provides guidance. Important principles include that these ships will have a designated Asbestos

Canadian Coast Guard – Western Region

Coordinator, typically the Chief Engineer, and that this position is responsible for monitor and updating the Vessel Specific Asbestos Management Plan (AMP). In addition, 7.A.10 outlines what must be in the AMP and provides a template. The CCG Shore-Based Safety Manual does not include a section on asbestos but the same principles will generally apply.

In addition to older CCG ships, asbestos is present in many of our older buildings, including office buildings, workshops and at remote sites. It has been confirmed present in the flange gasket materials and dark grey fibrous cement in fibreglass reinforced plastic (FRP) towers.

Specific controls for asbestos in the workplace include, in addition to the requirement for periodic surveys and removal / remediation where possible, that all employees and contractors are aware of the location, status and hazard of ACM in the workplace. Awareness is best provided as a part of familiarization to the workplace and by labelling, which identifies the presence of ACM in a space. If asbestos is disturbed in the CCG workplace, only CCG personnel trained and equipped to perform asbestos abatement shall conduct clean up and that to the level of type 2 (medium-risk). Type 3 (high-risk) work is only conducted by contractors.

Controls for lead paint in the workplace start with awareness of the possible presence of lead in paints, especially in older exterior or industrial coatings. Safe work instructions should be followed that focus on limiting the spread or inhalation of dust, during both the removal of paint from surfaces and the clean up of wastes.

The site specific Risk Register is to serve as a repository of risk related information and can aid in confirming that appropriate controls are in place. In all cases, work is not to be commenced until an operational risk assessment appropriate to the known or suspected hazards is conducted and it is confirmed that an appropriate level of control is in place.

While PPE is considered our last line of defence, its importance cannot be overstated when taking on work that may involve exposure to airborne hazards. The CCG Respiratory Protection Program (RPP) provides detailed guidance on measures to protect workers from airborne contaminants such as would be encountered during asbestos abatement work or the removal of paint (lead containing and otherwise) from surfaces.

6. Health and Exposure Documentation

Due the delayed nature of onset of potential ill health effects, many employees have questions regarding options for documentation of potential exposures. Whether an employee chooses to document in this manner is up to their discretion based upon their own understanding of exposure level and risk.

1. The WorkSafe BC Exposure Registry Program (WorkSafeBC Exposure Registry Program) is available to our employees. Once submitted via a simple online form, WorkSafe BC keeps this as a permanent record of the worker's exposure. When entering Employer Information on this

Canadian Coast Guard – Western Region

form, enter the following – Department of Fisheries and Oceans, Safety & Health Services, #200 – 401 Burrard Street, Vancouver BC, V6C 3S4, (604) 666-4481.

2. Health Canada Public Service Occupational Health Program maintains a file for each employee who receives medical assessments. Employees may submit a copy of their hazardous occurrence and incident report to Health Canada – this then becomes part of the employee's medical record.
3. Health Canada also advises that individuals may also consult with their personal physician regarding their own particular exposure history and personal health risks.
4. Regarding any submitted IIRs, document retention guidelines require that reports of investigations (IIR) into hazardous materials exposure be kept for a minimum of 30 years.

7. References

- [Canada Labour Code Part II, 124 Duties of Employers](#)
- [COHS Regulations Part X Hazardous Substances](#)
- [MOHS Regulations Part 20 Hazardous Substances](#)
- [National Joint Council \(NJC\) Occupational Health & Safety Directive, Part XI Hazardous Substances](#)
- [Fleet Safety Manual - 7.A.10 Asbestos](#)
- [Health risks of asbestos - Canada.ca](#)
- [Asbestos - WorkSafeBC](#)
- [Lead Paint and Hazards | HealthLinkBC](#)
- [Lead - WorkSafeBC](#)
- [WorkSafeBC Exposure Registry Program](#)

Questions regarding the contents of this bulletin may be directed to:

Manager, Coast Guard Safety & Security, Western Region – 250-480-2636

CCGS-NGCC, Bartlett Logistics Officer

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: July-24-18 10:41 AM
To: 'Jen Taptuna'; Jersch Russell; CCGS-NGCC, Bartlett Captain; Ayres Bob; Wright Edward; Granger Louise Anne
Cc: Chaikin Gabriel; McMillan Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Logistics Officer; Cole Ramshaw; CCGS-NGCC, Bartlett Engine Room; [REDACTED]
Subject: Rev.1 Bartlett Vent Cleaning plan.
Attachments: CCGS Bartlett Ventilation Cleaning Plan .Rev.1(ACM Dust).2018.07.23.doc

Attention all,

Revision #1 contains North West Environmental's one requested/suggested change. See attachment and email chain below. Subject to approval will commence work soonest.

Respectfully,

Scott Ware,
Chief Engineer,
CCGS Bartlett, Red
Cell: [REDACTED] or
Cell: [REDACTED]

BartlettCE@bar.ccg-s-ngcc.gc.ca

[REDACTED] for files above 5 MB

From: [REDACTED]
Sent: July-24-18 10:16 AM
To: CCGS-NGCC, Bartlett Chief Engineer; Jersch Russell; CCGS-NGCC, Bartlett Captain; Ayres Bob; Wright Edward; Granger Louise Anne
Cc: Chaikin Gabriel; McMillan Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Logistics Officer; Cole Ramshaw; CCGS-NGCC, Bartlett Engine Room; [REDACTED]
Subject: RE: Long awaited Bartlett Vent Cleaning plan.

Good morning, I've reviewed and overall it looks good. One thing that should be added is the requirement to dispose of respirator filters if the user suspects they might have gotten wet (once wet, they are no longer effective even after drying).

Please let me know if you have any questions.

Best regards,

[REDACTED]

North West Environmental Group Ltd.

Cell: [REDACTED]
Office: 250-384-9695 ext [REDACTED]
201 – 415 Gorge Road East Victoria, BC V8T 2W1

From: CCGS-NGCC, Bartlett Chief Engineer [<mailto:BartlettCE@ccgs-ngcc.gc.ca>]
Sent: July 24, 2018 8:58 AM

To: Jersch Russell <Russell.Jersch@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Captain <BartlettCO@ccgs-ngcc.gc.ca>; Ayres Bob <Bob.Ayres@dfo-mpo.gc.ca>; Wright Edward <Edward.Wright@DFO-MPO.GC.CA>; Granger Louise Anne <LouiseAnne.Granger@dfo-mpo.gc.ca>
Cc: Chaikin Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>; McMillan Cody <cody.mcmillan@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Senior Engineer <BartlettSE@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Chief Officer <BartlettCHO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Logistics Officer <BartlettLO@ccgs-ngcc.gc.ca>; Cole Ramshaw <Cole.Ramshaw@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Engine Room <BartlettER@ccgs-ngcc.gc.ca>
Subject: Long awaited Bartlett Vent Cleaning plan.

Good Morning All,

Please review attached plan. Questions/comments gratefully accepted. Once approved work can commence in earnest. (Signed copy submitted to Commanding Officer.

I will be in touch to schedule the inspection once approved. If I have misrepresented our discussion of last week please let me know soonest.

Thank you all for your time and patience.

Respectfully,

Scott Ware,
Chief Engineer,
CCGS Bartlett, Red
Cell: [REDACTED] or
Cell: [REDACTED]

BartlettCE@bar.ccgs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB



Fisheries and Oceans
Canadian Coast Guard

Pêches et Océans
Garde côtière canadienne

MEMORANDUM NOTE DE SERVICE

To
A

Russell Jersch,
Marine Superintendent,
Fleet Operations, Western Region,
25 Huron St, Victoria, BC.

From
De

Scott Ware,
Chief Engineer (Red),
CCGS Bartlett

Subject
Object

Bartlett Ventilation Cleaning Access Plan (July 2018):

This plan was developed in conjunction with Bartlett/ITS-MES/North West Environmental Services personnel, and submitted for approval, per senior management's request dated 16 July 2018. The plan was developed in the spirit and intent of current federal government policies and accepted industrial hygiene practices, used onboard during Asbestos Containing Materials (ACM) clean-up.

It has been long suspected that the cavities above the deckhead panels onboard Bartlett contained ACM dust. Test results accumulated from the Dec/Jan and May/July refits this year, by an independent 3rd party industrial hygienist, has confirmed this. It was so broadly present, it was recommended and accepted that no further testing need be conducted in these zones. The hygienist further stated the entire above deckhead panels space should be treated as an ACM area.

This has had a negative effect on routine annual ventilation and duct heater cleaning on Bartlett. This was further compounded by wipe sample testing from inside the ventilation trunking being positive for various levels and types of ACM dust. Therefore to provide necessary access through this cavity zone to clean the vent trunking requires an approved plan and subsequent verification of the actual process during the first execution of the plan by the industrial hygienist, for compliance. Adherence to the plan will contain any potential ACM dust from entering the earlier ACM cleaned crew cabins during the scheduled ventilation cleaning. The submitted procedure is:

Deckhead/HVAC Procedure

1. Set up a monolithic popup enclosure under reheat coil. Ensure no gaps around deckhead seal. Place under negative pressure.
2. Trace outline of the new access hole using a template (expected 9" x 20").
3. Drill four corner holes inside these lines, using a BitBuddy (or similar) connected to a certified HEPA vacuum, to contain dust/debris.
4. Cut out new access, using electric shears. Reduce vibration, using hand or suction cup on the deckhead panel, to minimize disturbing the dust in the overhead space.
5. Remove the sharp edges on opening in deckhead panel.
6. Clean the deckhead cavity thru the new access, using an HEPA vacuum on all reachable surfaces, including the HVAC system trunking.
7. Wet wipe vacuumed surfaces, where possible, carefully remove loose insulation, if needed.

Canada

Security Classification - Classification de sécurité CONFIDENTIAL
Our file - Notre référence BART 2018-07-23-001.Rev.1
Your File - Votre référence
Date July 23, 2018

8. Install a temporary deckhead seal using 6-mil poly and tape. If the vessel were to go to sea at this point, ensure the tape used will not delaminate under at-sea conditions (e.g. increased humidity, temperature changes, etc.). Note: if going to sea prior to cleaning the HVAC, re-clean the deckhead space by HEPA vacuuming and wet wiping, before accessing/cleaning the vent trunking. (This step is a worse-case scenario. Going to sea without a running accommodation ventilation system is not recommended.)
9. When ready to work on HVAC, install a temporary enclosure using zip poles and 6-mil poly. Place under negative pressure.
10. Clean the reheat coil. Install bladders and commence with HVAC cleaning. Ducts will be under negative pressure for the cleaning process and the HVAC cleaner must have training/experience working with asbestos and have the appropriate controls in place (e.g. vacuum truck is certified HEPA filtered etc).
11. Leave temporary enclosure in place.
12. Before removing enclosure at step 11, install new permanent access cover/hatch (which will be cut and prepared ashore). New permanent cover to be sealed with the same silicone firestop caulking currently being used on the deckhead paneling joints, around the ship.
13. Once cover installed, clean inside enclosure to prevent any dust release, follow personal decontamination. Upon exiting, while still wearing mask, disassemble temporary enclosure, placing in double bag per ACM debris material disposal.

The above work will be done moderate risk with additional controls. Additional controls include the use of negative pressure and enclosure. Moderate risk requires the use of a half-face respirator with P100 filters, disposable coveralls, and decontamination area (see below for details). Additional PPE as required. (Please note if respiratory cartridges get wet or are suspected of being wet they must be changed. Even dried out they will no longer work.)

NWest will review the first set of deckhead panel cutting work to ensure controls are adequate. NWest will also conduct air sampling (occupational/breathing zone and ambient) on at least the first set of work.

Decontamination area: (Location where you'll have your wash bucket with clean, soapy water.)

1. Inside enclosure, HEPA vacuum and/or damp wipe disposable coveralls (after cleaning the inside of the enclosure).
2. Removal coveralls and place in waste bag.
3. Step out, wearing respirator.
4. Wash hands. Carefully damp wipe outside of respirator then remove. Baby wipes can be used instead of a soapy water wash bucket. If water is used, it must be disposed of as asbestos contaminated.

Submitted for your consideration and approval.

Scott Ware,
Chief Engineer (Red)
CCGS Bartlett

Cc'd: ITS-MES, Fleet Ops, Fleet Safety, Ship's Command

Canada

CCGS-NGCC, Bartlett Captain

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: July-28-18 7:33 PM
To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer
Cc: McMillan Cody; Chaikin Gabriel
Subject: FW: Bartlett wire sample result
Attachments: 35992 AB1 V1.0 2018-07-28 CCGS Bartlett S1 to 3.pdf; Ch.Off. Hd.Vent.Htr.Wire (1).jpg; Ch.Off. Hd.Vent.Htr.Wire (2).jpg

Good Evening Gentlemen,

Good News! Dodged a significant bullet today. Sample negative for asbestos, on ventilation ducting individual heating coil wire found yesterday and tested today. See email chain below for context and NWest comments, test results attached. The wire had a black woven jacket over a black sheath with a large white core (pics attached, looked just like the stuff on the bridge except for the weave). Subject to further suspicious findings we are good to go. Deckhead panel cutting approved and witnessed. No ACM materials outside of the enclosure and none on the worker inside. All controls working properly. Superior Steam Clean scheduled for Tuesday, panel access cutting continues in the morning.

On an additional positive note, both main engines ran for more than an hour today and all six rafts just arrived from Dartmouth, 60 minutes ago. More tomorrow.

Respectfully,

Scott Ware,
Chief Engineer,
CCGS Bartlett, Red
Cell: [REDACTED] or
Cell: [REDACTED]
BartlettCE@bar.ccg-s-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]
Sent: July-28-18 6:49 PM
To: CCGS-NGCC, Bartlett Chief Engineer
Cc: Grant Rogers
Subject: RE: Bartlett wire sample result

No disagreement at this time.
Thanks very much,



[REDACTED]
Project Manager
North West Environmental Group Ltd.
C. [REDACTED]

From: CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca>

Sent: July 28, 2018 5:31 PM

To: [REDACTED]

Cc: [REDACTED]

Subject: RE: Bartlett wire sample result

Good Afternoon, [REDACTED]

Thank you! That is the best possible result. These heaters are simple two wire units utilizing the same wire at both ends. All made by the same manufacturer (the heater units that is). So unless we find different wiring and subject to review by my management or disagreement with you based on this reply, we are going to proceed as approved with the plan witnessed on Friday past. Thanks again [REDACTED] and [REDACTED] for your positively a stellar effort on our behalf.

Please charge to Master Card #:

[REDACTED]
CCGS Bartlett, CE,
Govt of/Gouv du Canada
[REDACTED]

We are PST exempt, [REDACTED]

Thank you.

Respectfully,

Scott Ware,
Chief Engineer,
CCGS Bartlett, Red
Cell: [REDACTED] or
Cell: [REDACTED]

BartlettCE@bar.ccgsg-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: [REDACTED]

Sent: July-28-18 4:16 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: [REDACTED]

Subject: Bartlett wire sample result

Good afternoon, please find attached the analytical report for the sample of cabling you collected from a heater. Since this is not a homogeneous material, we analysed three subsamples. Note: other wiring should be treated as asbestos containing, if present, until it can be analysed.

Best,

[REDACTED]
Project Manager
North West Environmental Group Ltd.



★ NEW - Contractor Pricing!
#201 - 415 Gorge Road East
Victoria, B.C. V8T 2W1

C: [REDACTED]
O: (250) 384-9695 ext. [REDACTED]

The information contained in this email message is privileged and confidential information intended only for the use of the party named above. If you have received this communication in error, please notify the author and delete the message from your system. Your cooperation is appreciated.



North West
Environmental Group Ltd.

Bulk Sample Report

1 - 1611 Bowen Road
Nanaimo, BC V9S 1G5

Tel: (250) 591-9695
Fax: (250) 384-9865
e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

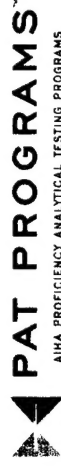
Project: CCGS Bartlett - Cable Samples

Date: July 28, 2018

Client Job or PO#: .

Project number: 35992

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35992-1b	Washplace Heater	Jul-28-2018	PG	Cable	Silver	100	None Detected	0	Glass (50%) Non-Fibrous (50%)	100	
35992-2b	Washplace Heater	Jul-28-2018	PG	Cable	Silver	100	None Detected	0	Glass (50%) Non-Fibrous (50%)	100	
35992-3b	Washplace Heater	Jul-28-2018	PG	Cable	Silver	100	None Detected	0	Glass (50%) Non-Fibrous (50%)	100	



AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314